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DEPARTMENT OF THE INTERIOR

MONOGRAPHS

OF THE

UNITED STATES GEOLOGICAL SURVEY

VOLUME XLVIII

Part II.—PLATES.

WASHINGTON
GOVERNMENT PRINTING OFFICE
1905

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UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

STATUS

OF THE

MESOZOIC FLORAS OF THE UNITED STATES

SECOND PAPER

BY

LESTER F. WARD

WITH THE COLLABORATION OF

WILLIAM M. FONTAINE, ARTHUR BIBBINS, AND G. R. WIELAND

Part II.—PLATES.

WASHINGTON

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National Museum

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PLATE I.

Triassic Flora of Arizona.

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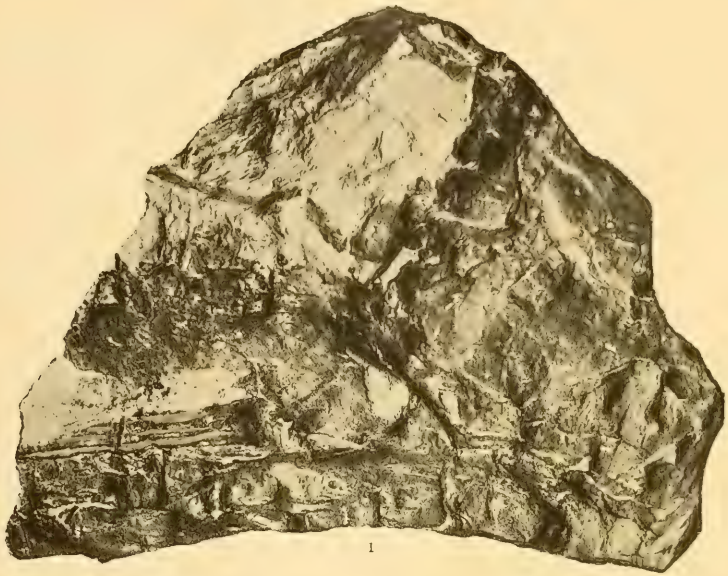
Araucarites shinarumpensis Ward n. sp. 30



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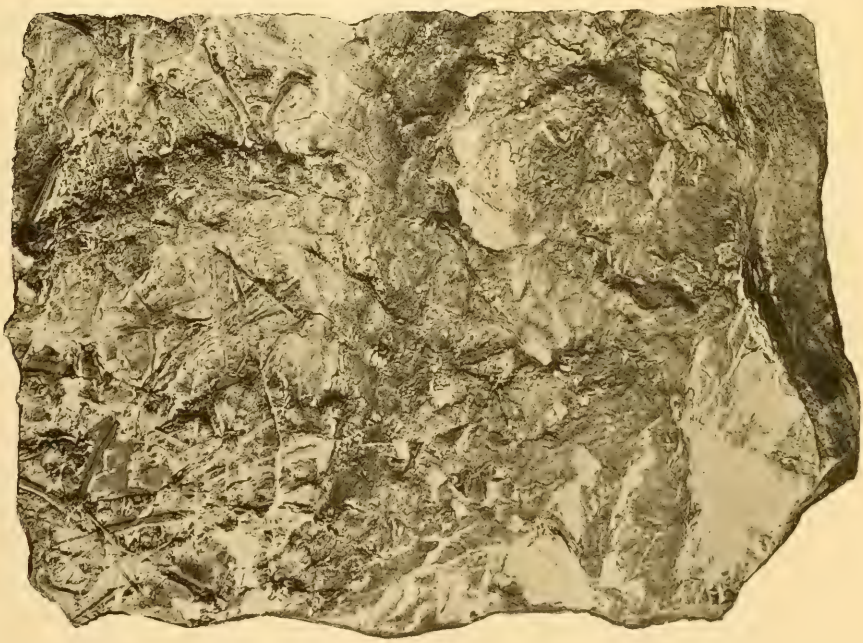

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CONIFEROUS PLANTS FROM THE TRIAS OF ARIZONA.

PLATE II.

PLATE II.

TRIÄSSIC FLORA OF ARIZONA.

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FIGS. 1, 2. ARAUCARITES SHINARUMPENSIS Ward n. sp..... 30

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CONIFEROUS PLANTS FROM THE TRIAS OF ARIZONA.

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PLATE III.

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Fig. 3. View of the interior of one of the same split longitudinally through the center.

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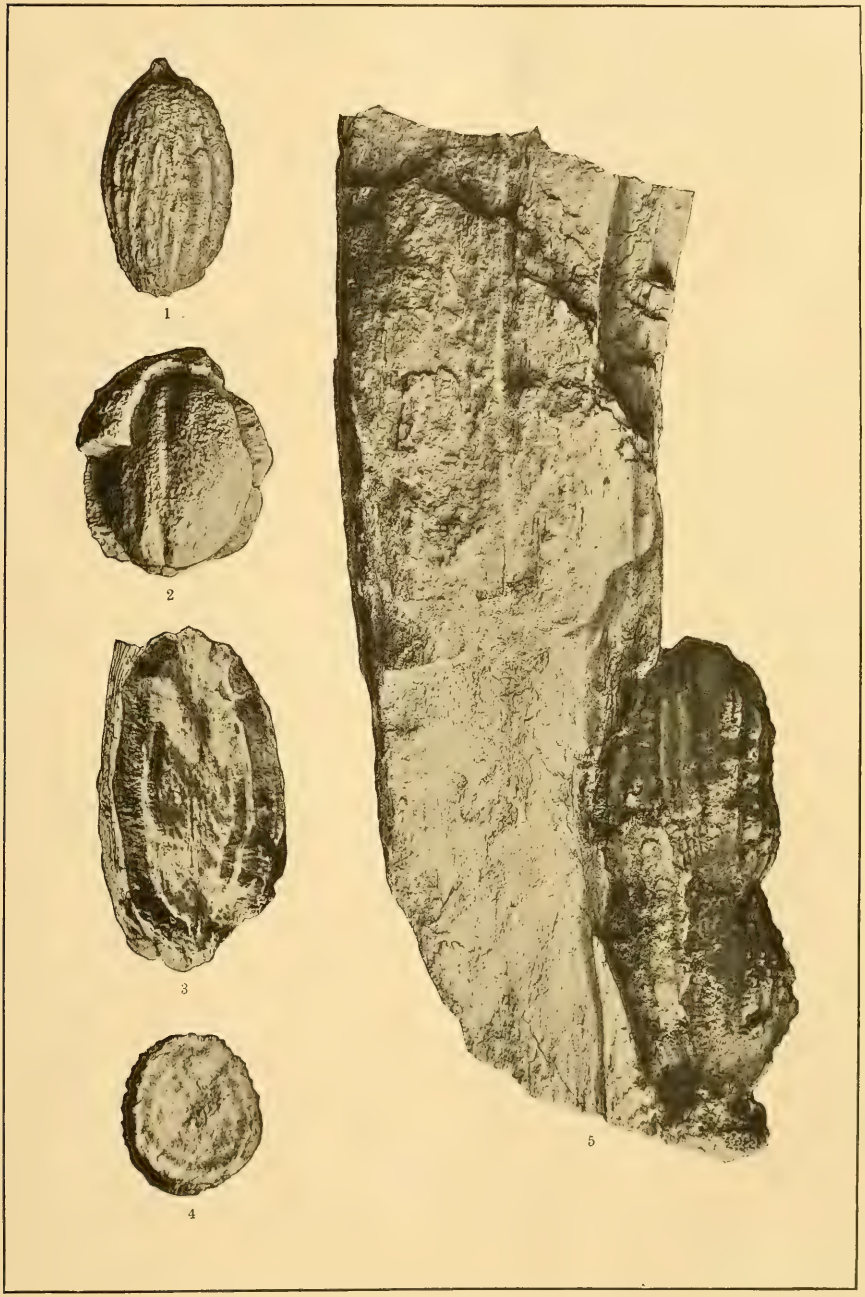
Fig 5. View of a piece of the wood from the interior of a stump with three of the resinous bodies attached to it, showing their moniliform arrangement.



CONIFEROUS PLANTS FROM THE TRIAS OF ARIZONA.

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PLATE IV.

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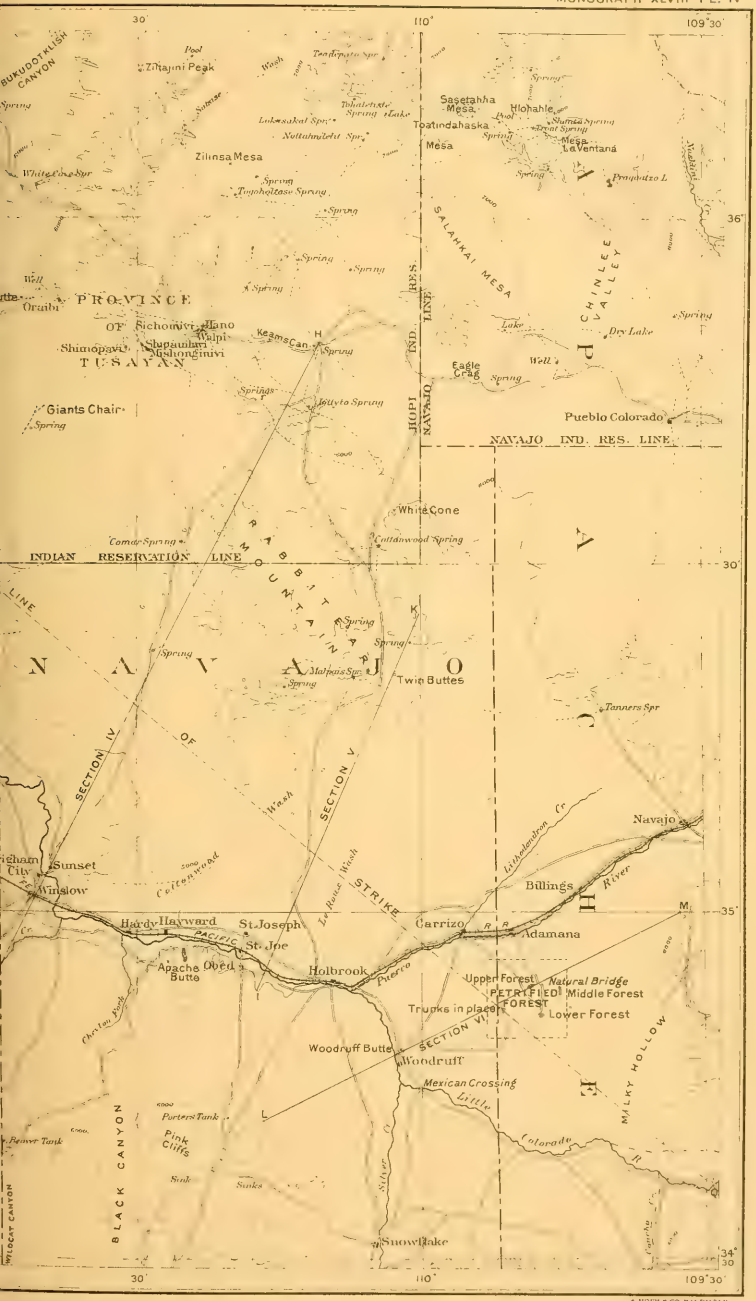
Sketch map of the Little Colorado Valley, Arizona, and adjacent regions..... 44

U. S. GEOLOGICAL SURVEY

SKETCH MAP OF LITTLE COLORADO

0 10 20

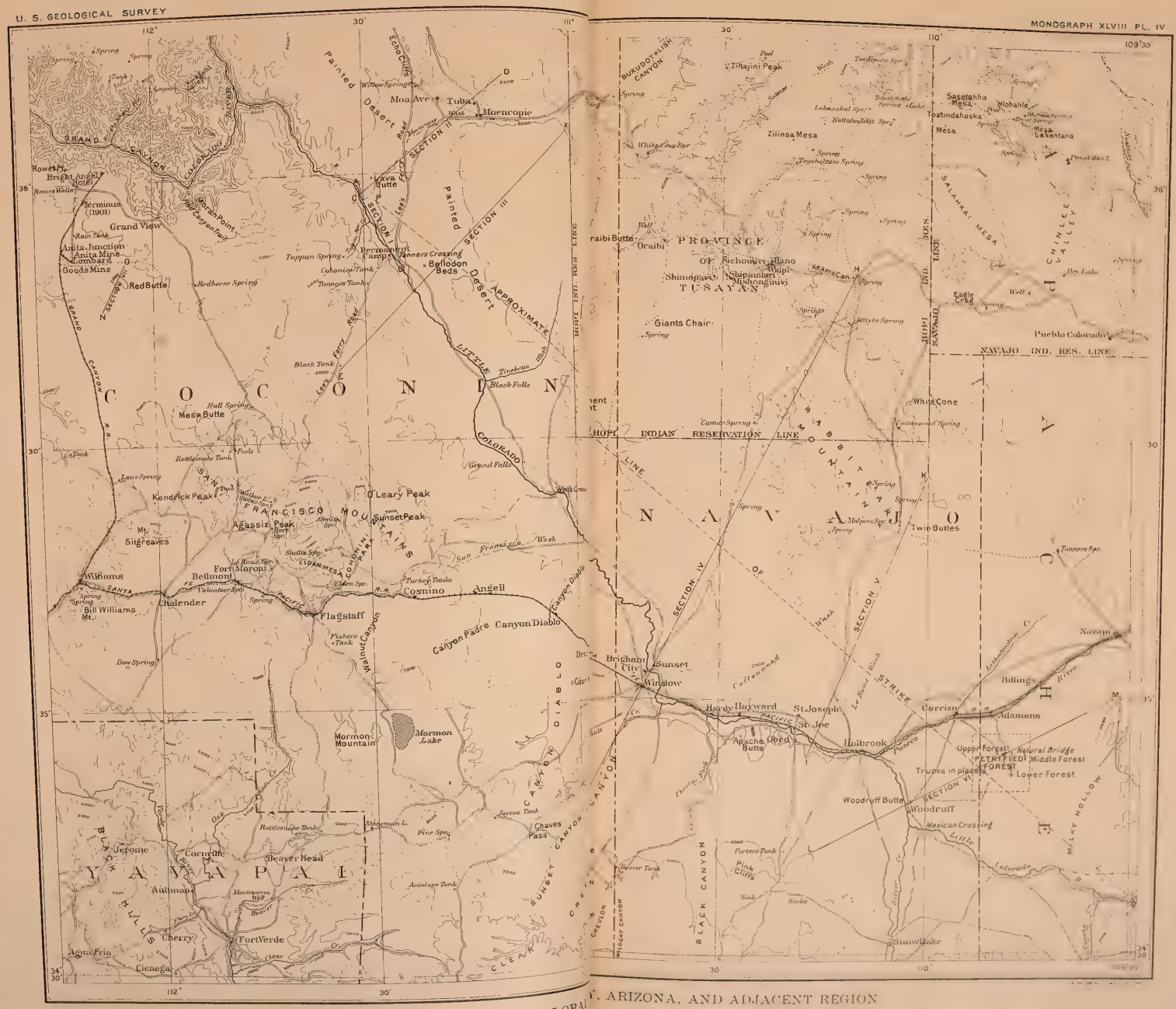
Contour



ARIZONA, AND ADJACENT REGION

0 50 60 miles

0 feet



SKETCH MAP OF LITTLE COLORA[illegible]Y, ARIZONA, AND ADJACENT REGION

0 10 20 miles

Contour interval 1000 feet

PLATE V.

PLATE V.

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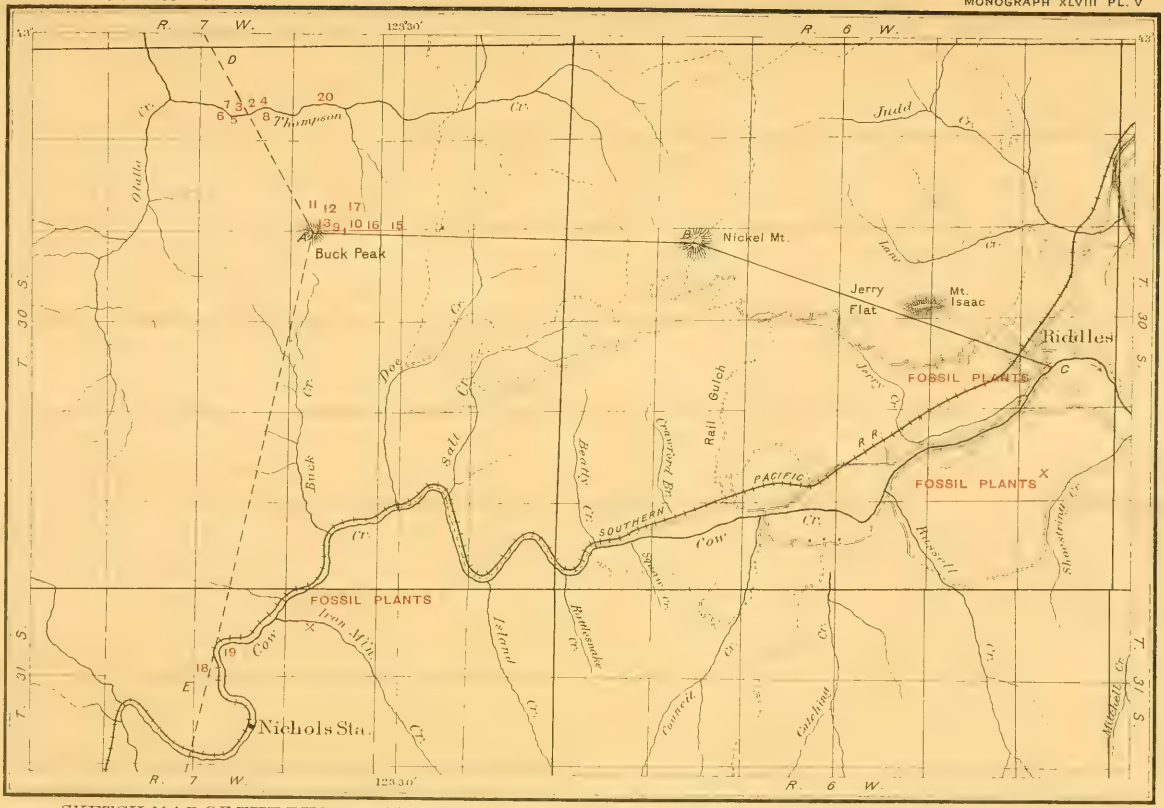

SKETCH MAP OF THE BUCK MOUNTAIN REGION AND COW CREEK VALLEY, DOUGLAS COUNTY, OREG.
showing fossil-plant localities, approximate strike of the Jurassic (*DA-AE*), and sections *AB* and *BC*

Scale
0 1 2 3 4 miles

A. HORN & CO. BALTIMORE

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PLATE VI.

Jurassic Flora of Oregon.

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Fig. 2. Enlargement of Fig. 1, × 2.

Figs. 3–9. Dicksonia oregonensis Font. n. sp. 55

Fig. 4. Pinnule of Fig. 3 enlarged, × 2.

Fig. 6. Pinnule of Fig. 5 enlarged, × 2.

Fig. 7. Portion of Fig. 5 slightly enlarged.

Fig. 9. Pinnule of Fig. 8 enlarged, × 2.

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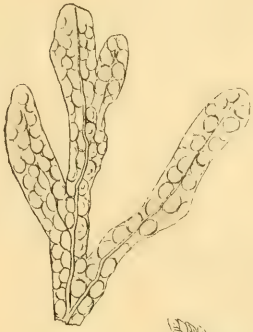

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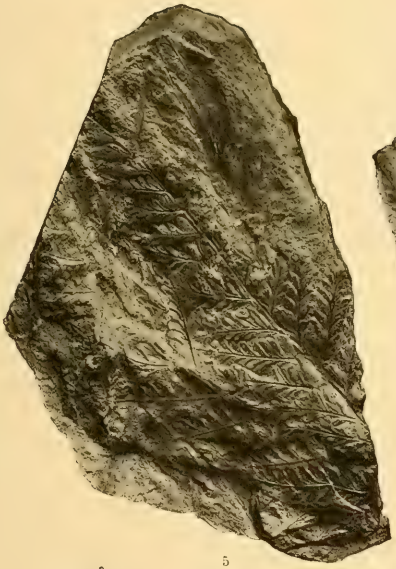

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JURASSIC LIVERWORTS AND FERNS FROM OREGON.

PLATE VII.

PLATE VII.

Jurassic Flora of Oregon.

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Figs. 1–10. Dicksonia oregonensis Font. n. sp. 55

Fig. 3. Pinnule of Fig. 2 enlarged, × 2.

Figs. 6–8. Enlarged sterile pinnules showing nervation, × 2.

Fig. 9. Enlarged fertile pinnules showing a sorus, × 2.

Fig. 10. Fertile pinnule showing one sorus somewhat more enlarged than Fig. 9.

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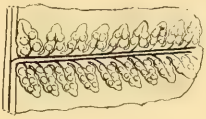

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JURASSIC FERNS FROM OREGON.

PLATE VIII.

PLATE VIII.

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Figs. 1–3. Coniopteris hymenophylloides (Brongn.) Sew. 59

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Fig. 6. Enlarged pinnule of Fig. 4, × 2.

Fig. 8. Enlarged pinnules of Fig. 7, × 2.

Fig. 10. Enlarged pinnule of Fig. 9, × 4.

Fig. 11. Enlarged pinnule of Fig. 9, × 2.

Figs. 12–15. Polypodium oregonense Font. n. sp. 63

Fig. 13. Enlarged pinnule of Fig. 12, × 2.

Fig. 14. Portion of a pinnule of Fig. 12 × 4.

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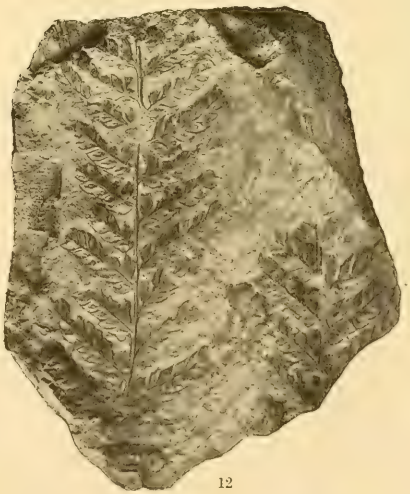
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JURASSIC FERNS FROM OREGON.

PLATE IX.

PLATE IX.

Jurassic Flora of Oregon.

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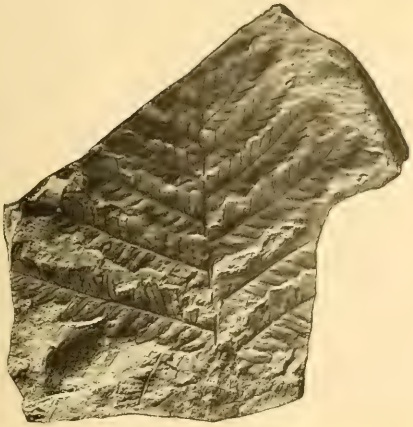
Figs. 1–8. Polypodium oregonense Font. n. sp. 63

Fig. 2. Enlarged pinna of Fig. 1, × 2.

Figs. 4, 5. Enlarged pinnules of Fig. 3, × 2.

Fig. 8. Enlarged pinnule of Fig. 7, × 2.



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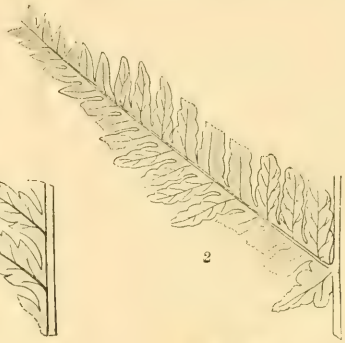

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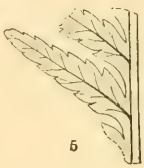

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JURASSIC FERNS FROM OREGON.

PLATE X

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Figs. 1–7. Polypodium oregonense Font. n. sp. 63

Fig. 3. Enlarged pinnules of Fig. 2, × 2.

Fig. 5. Portion of a pinnule of Fig. 4 enlarged to show the sori, × 2.

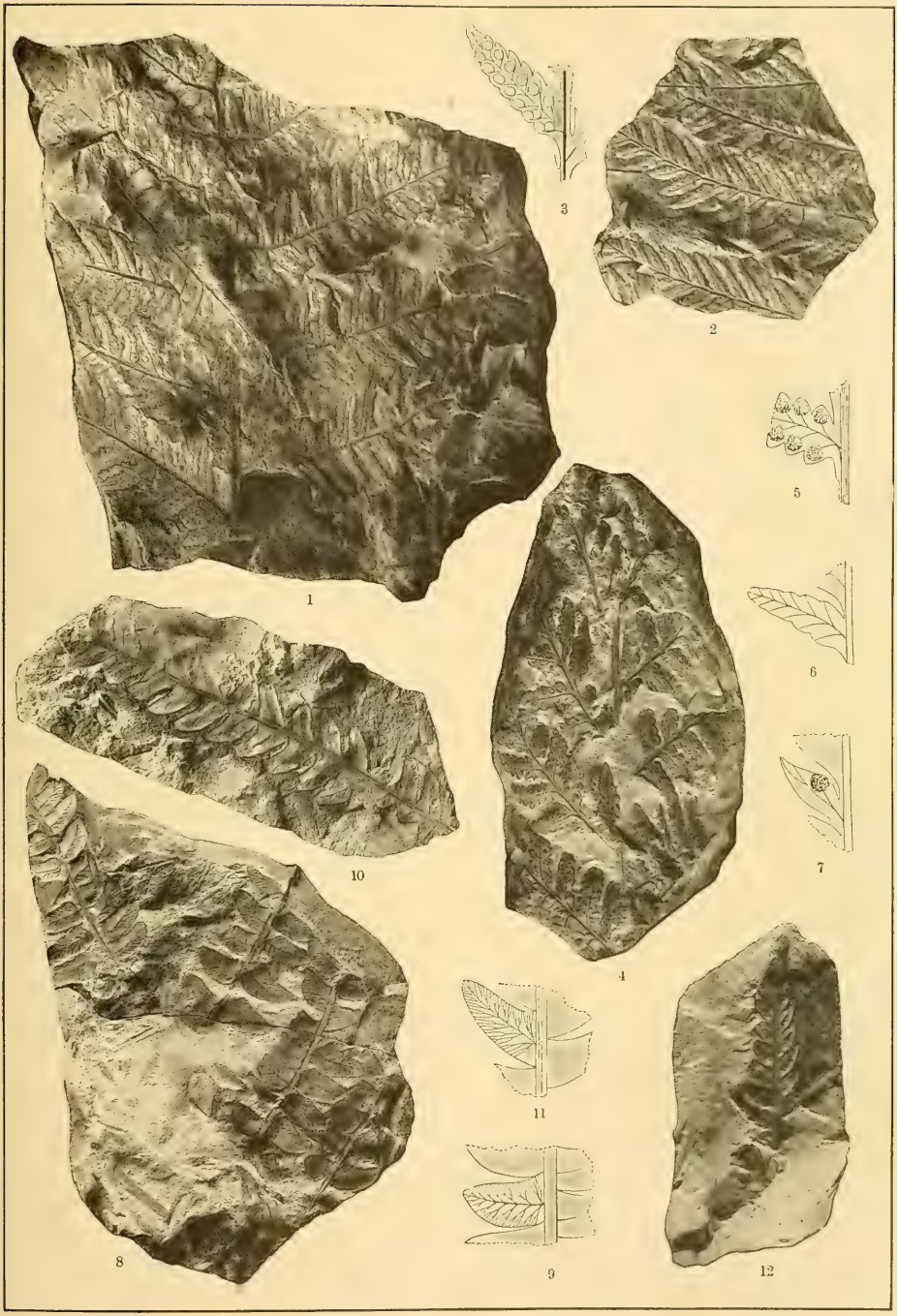
Fig. 6. Enlarged sterile pinnule showing the nervation, × 2.

Fig. 7. Enlarged fertile pinnules showing a sorus, × 2.

Figs. 8–12. Cladophlebis vaccensis Ward n. sp. 66

Fig. 9. Enlarged pinnule of Fig. 8. × 2.

Fig. 11. Enlarged pinnule of Fig. 10, × 2.



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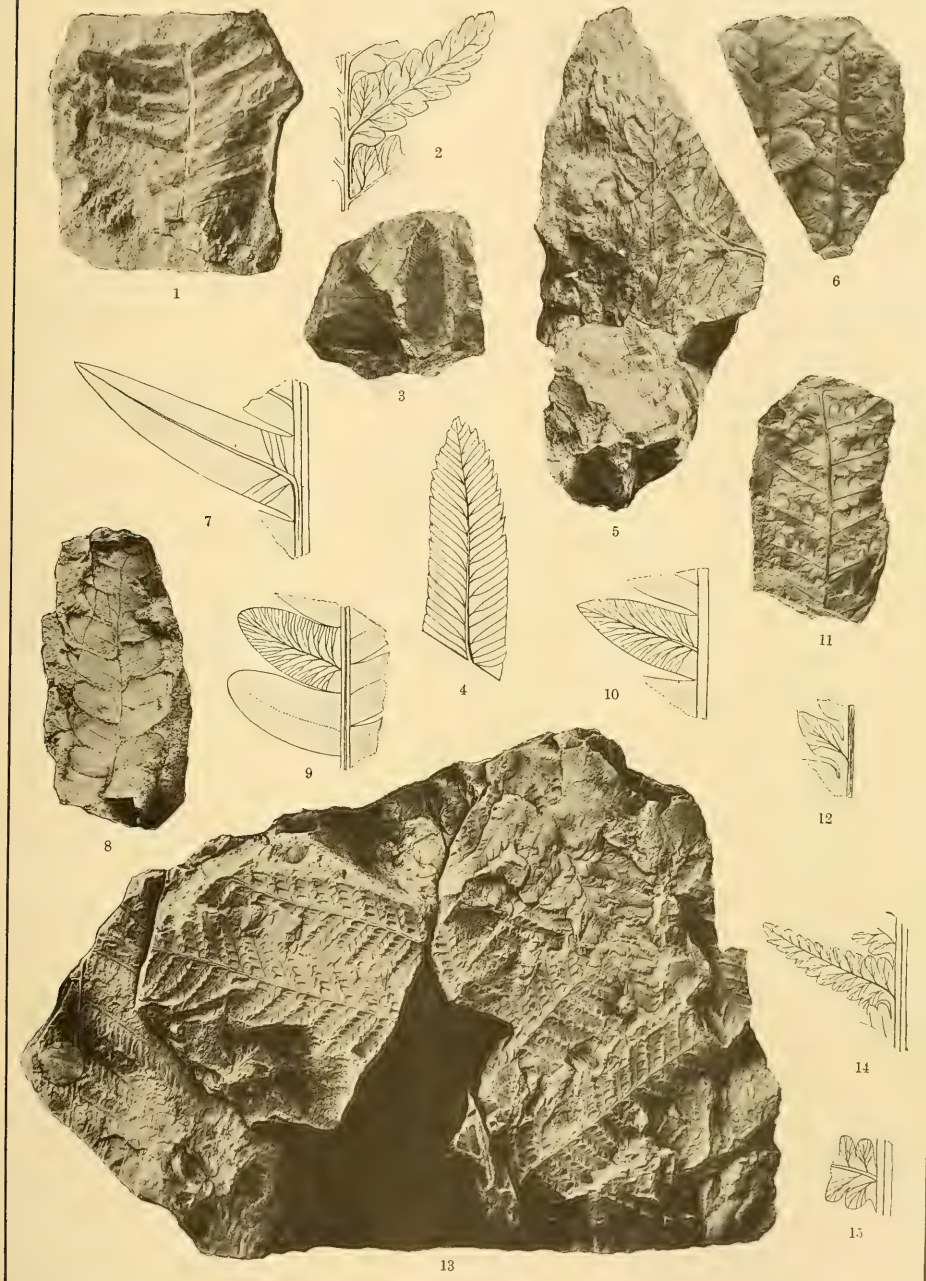

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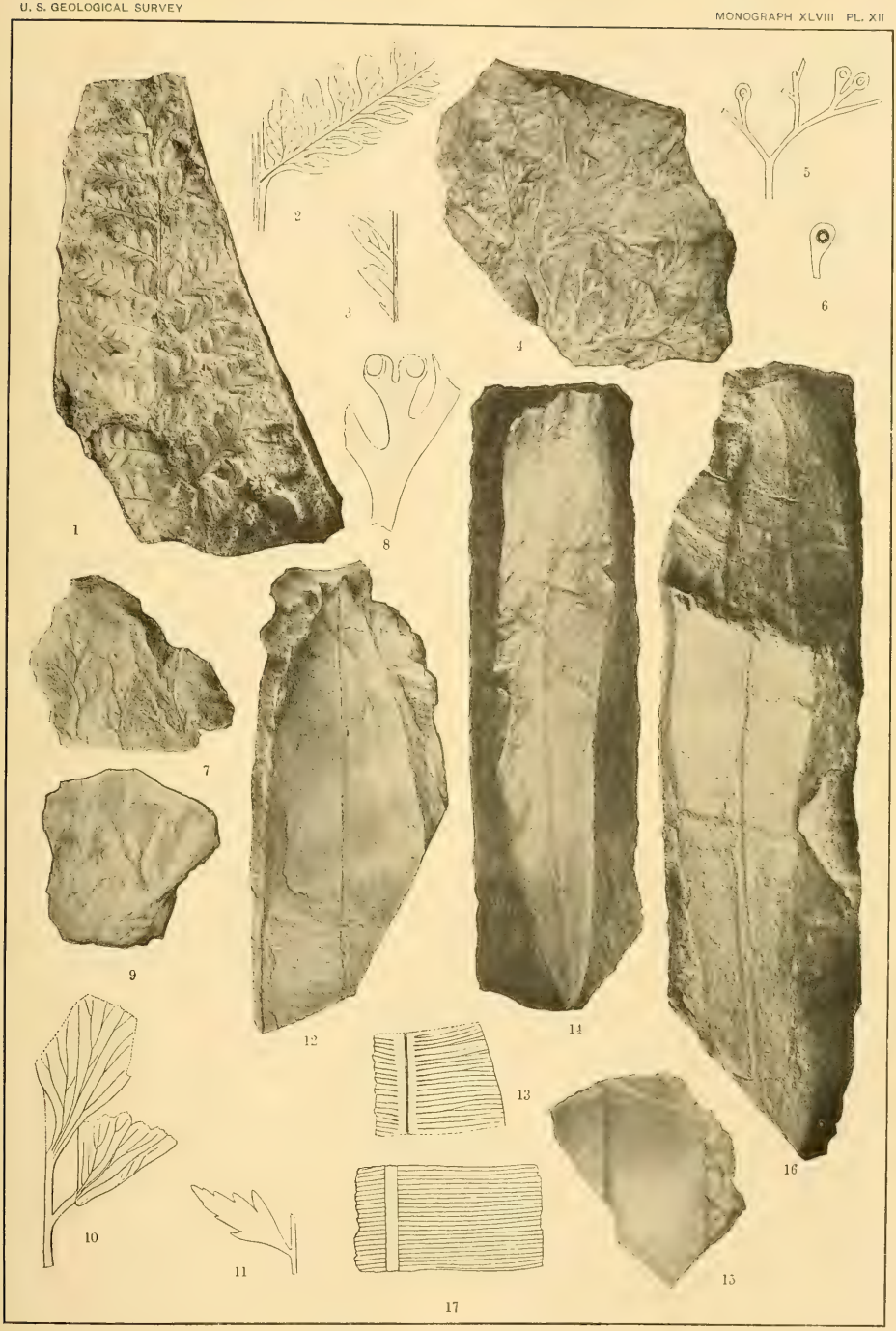

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Figs. 4–8. Tæniopteris vittata Brongn. 80

Fig. 8. Enlarged portion of Fig. 7, × 2.

Figs. 9, 10. Tæniopteris? oregonensis Font. n. sp 82

Fig. 10. Enlarged portion of Fig. 9, × 2.

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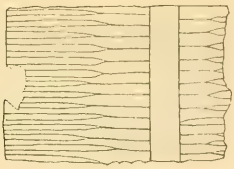
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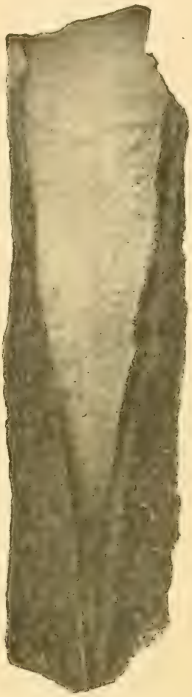
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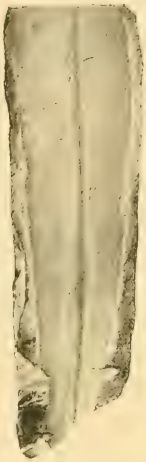
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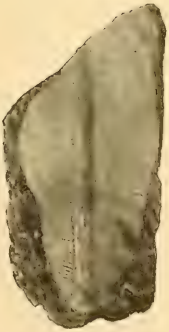
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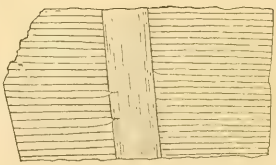
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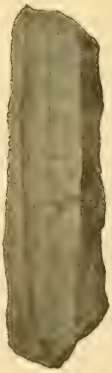
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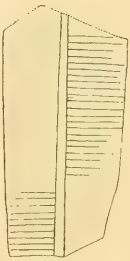
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JURASSIC FERNS FROM OREGON.

PLATE XIV.

PLATE XIV.

Jurassic Flora of Oregon.

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Figs. 1–4. Macrotæniopteris californica Font. 82

Fig. 4. Pen drawing of a portion of Fig. 3, natural size.

Figs. 5–11. Sagenopteris Gœpperti Zign. 83

JURASSIC FERNS FROM OREGON.

PLATE XV.

PLATE XV.

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Figs. 1–3. Sagenopteris paucifolia (Phill.) Ward n. comb. 85

Figs. 4, 5. Sagenopteris grandifolia Font. n. sp. 87

Fig. 5. Pen drawing of a portion of Fig. 4, natural size.

Figs. 6–9. Danæopsis Storrsii Font. n. sp. 87

Fig. 7. Enlarged pinnule of Fig. 6, × 2.

Fig. 8. Portion of same still further enlarged to show the capsules, × 3.

Fig. 9. Another enlarged pinnule, showing the capsule near the base, × 2.

Fig. 10. Equisetum ? sp. Font. 88

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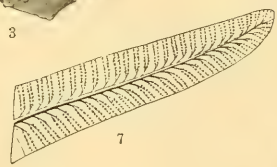

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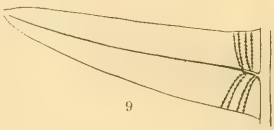

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JURASSIC FERNS AND EQUISETA FROM OREGON.

PLATE XVI.

PLATE XVI.

Jurassic Flora of Oregon.

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Figs. 3–9. Nilsonia orientalis Heer. 90
Fig. 8. Portion of Fig. 7 enlarged, × 2.

Figs. 10–13. Nilsonia orientalis minor Font. n. var 92
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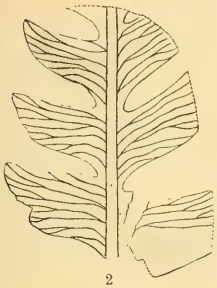
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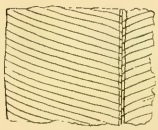
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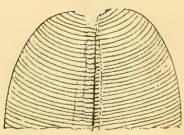
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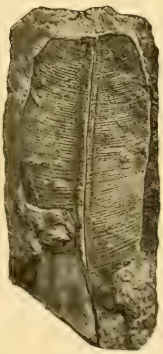
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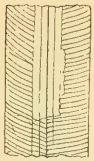
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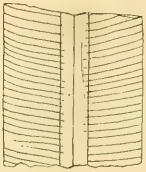
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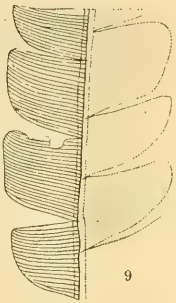
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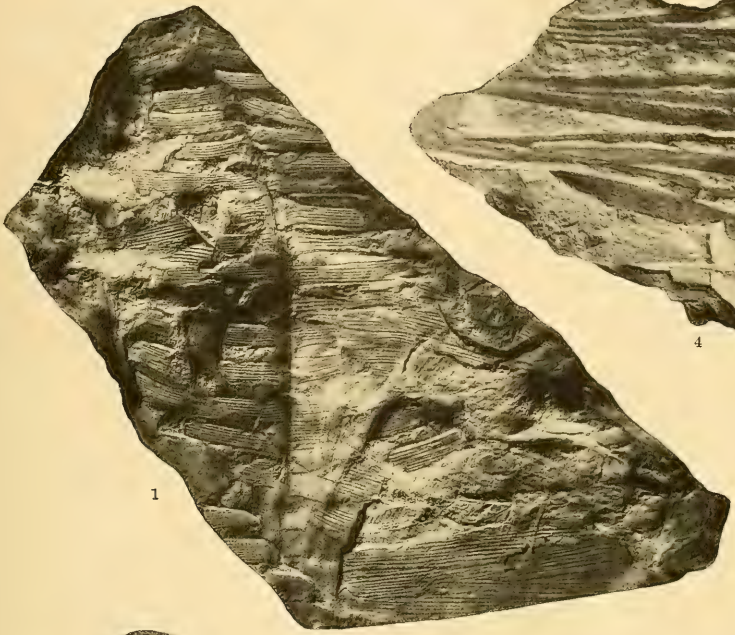

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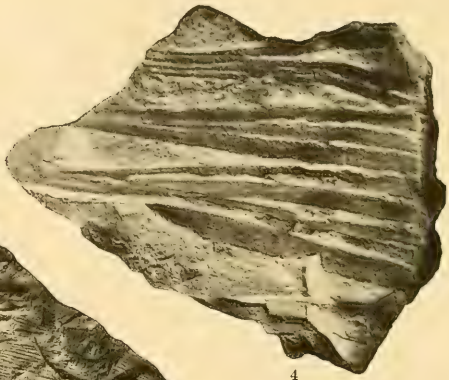

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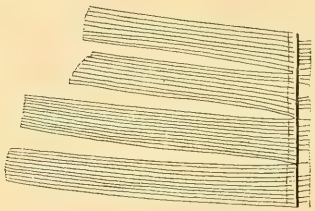

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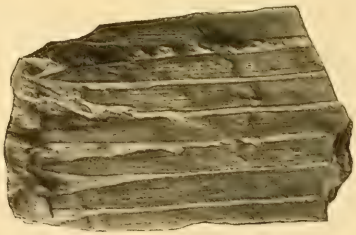

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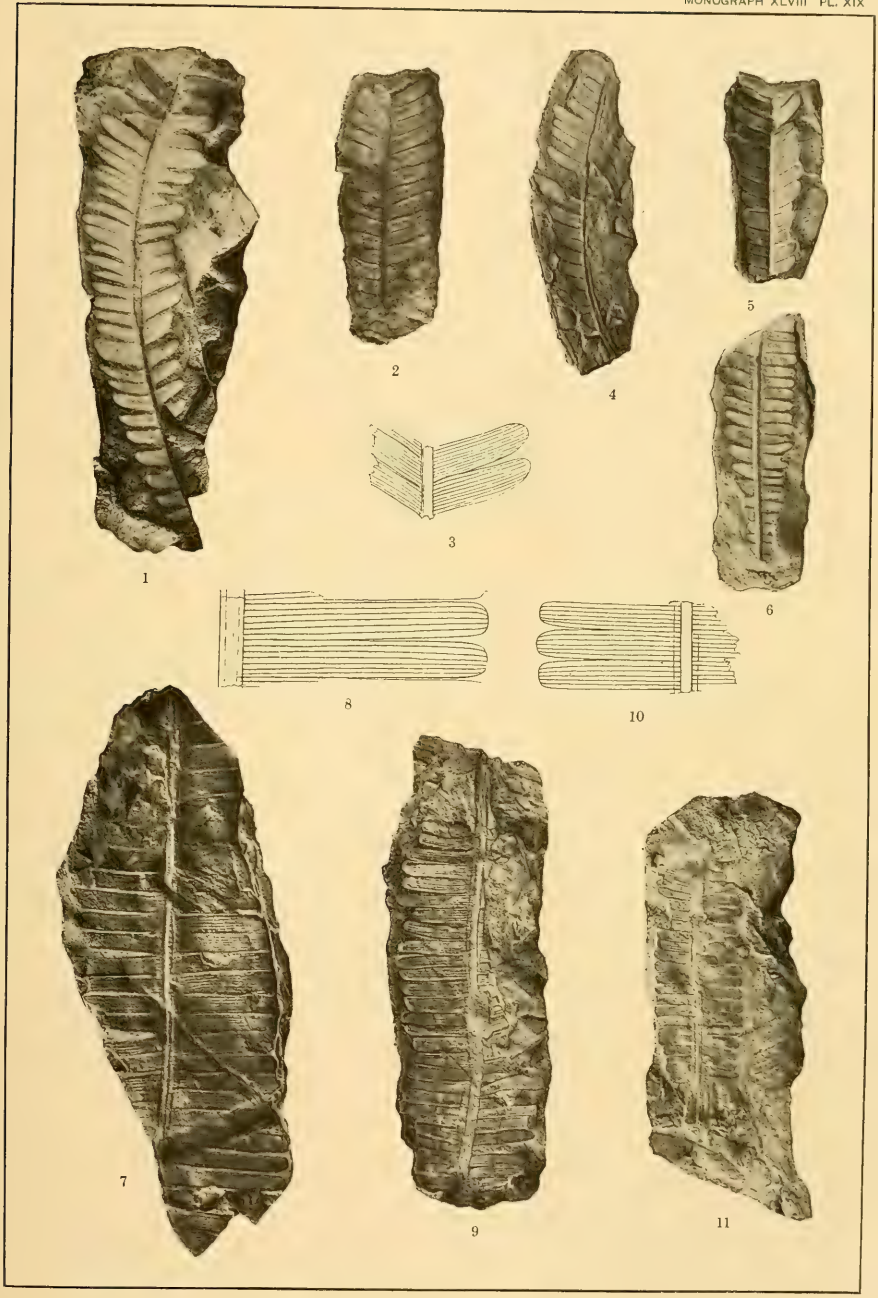

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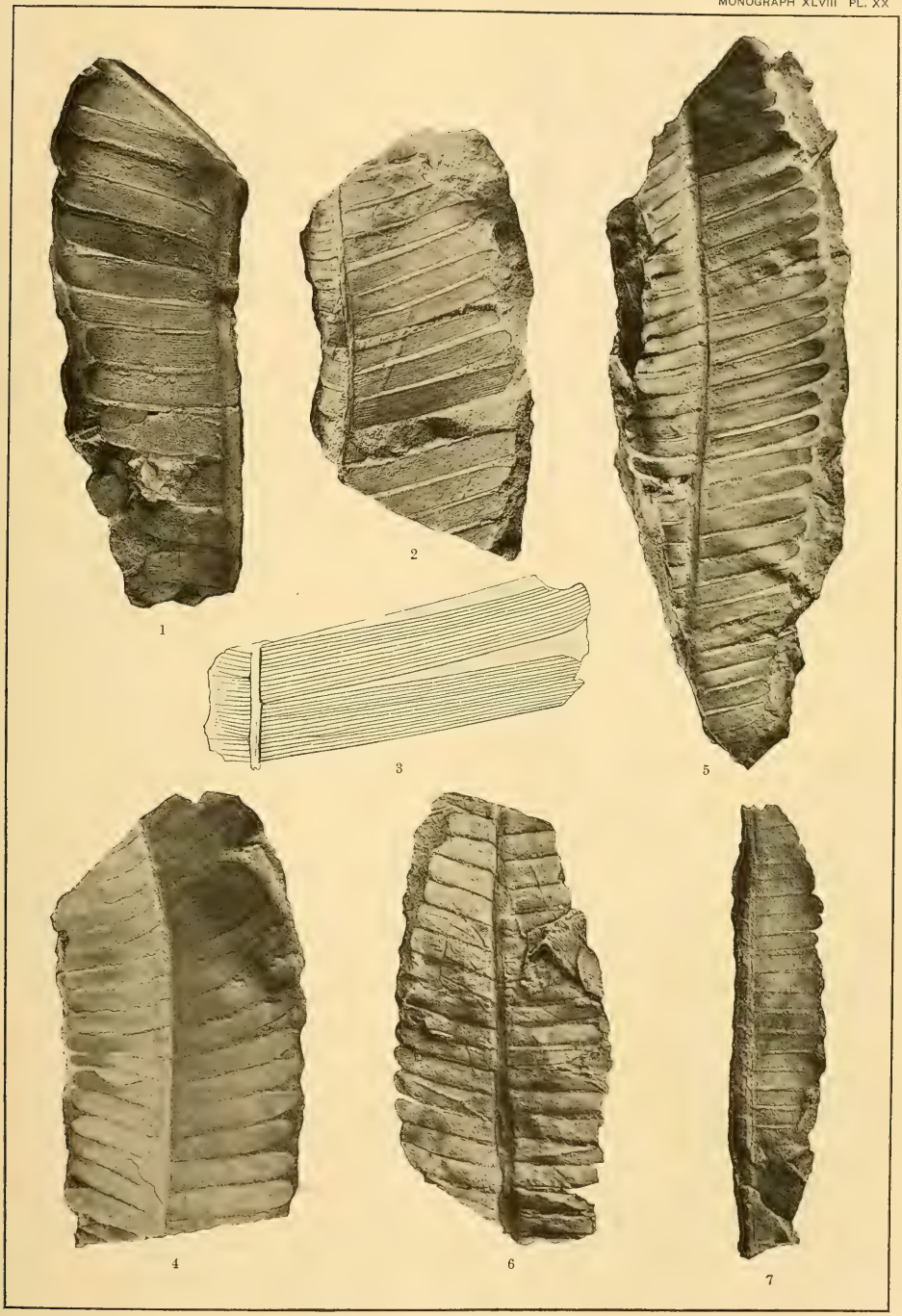

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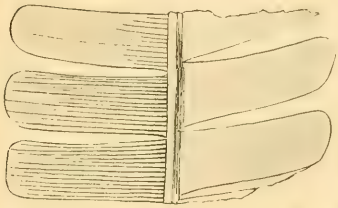
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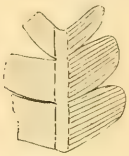
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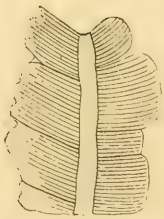
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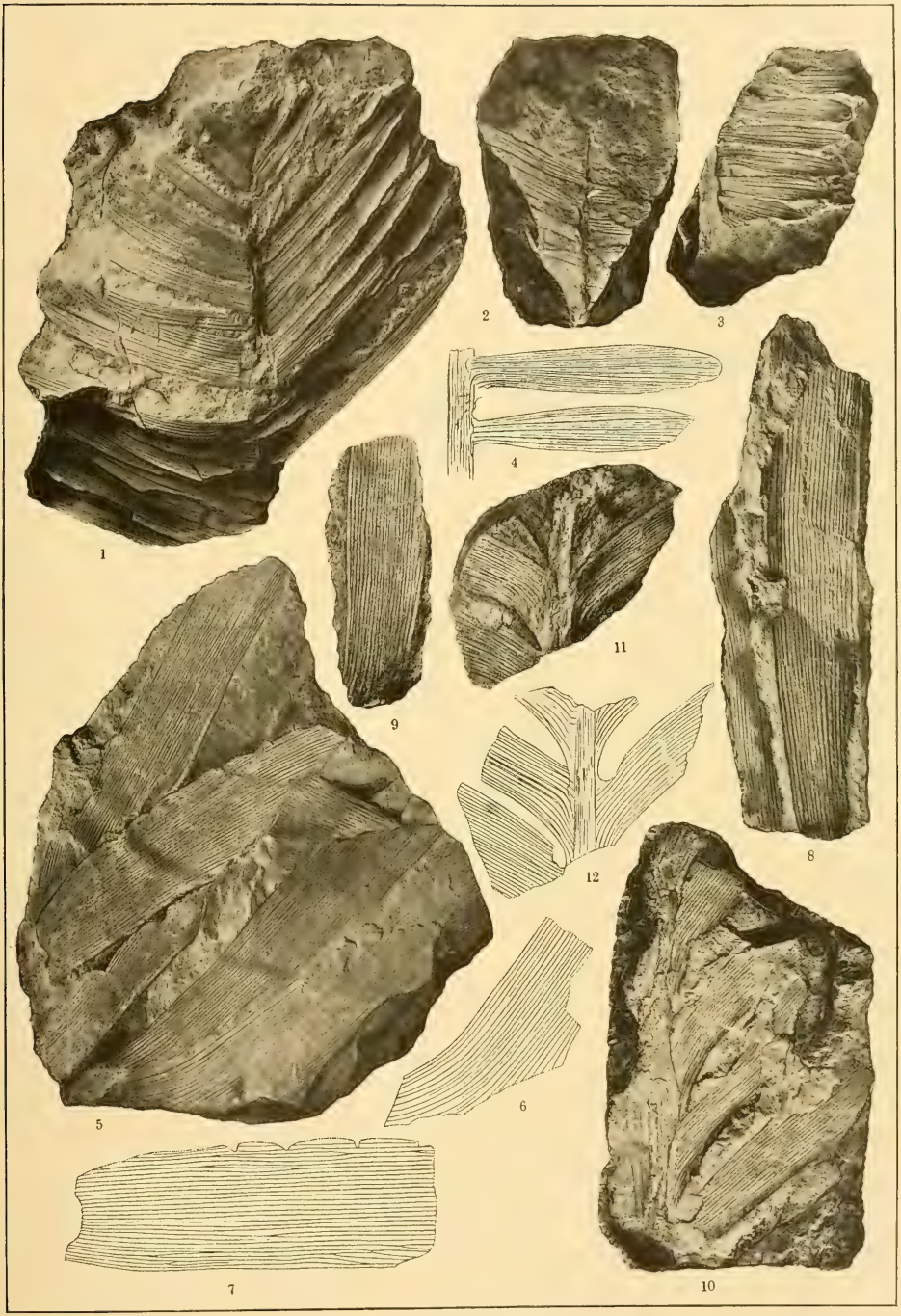

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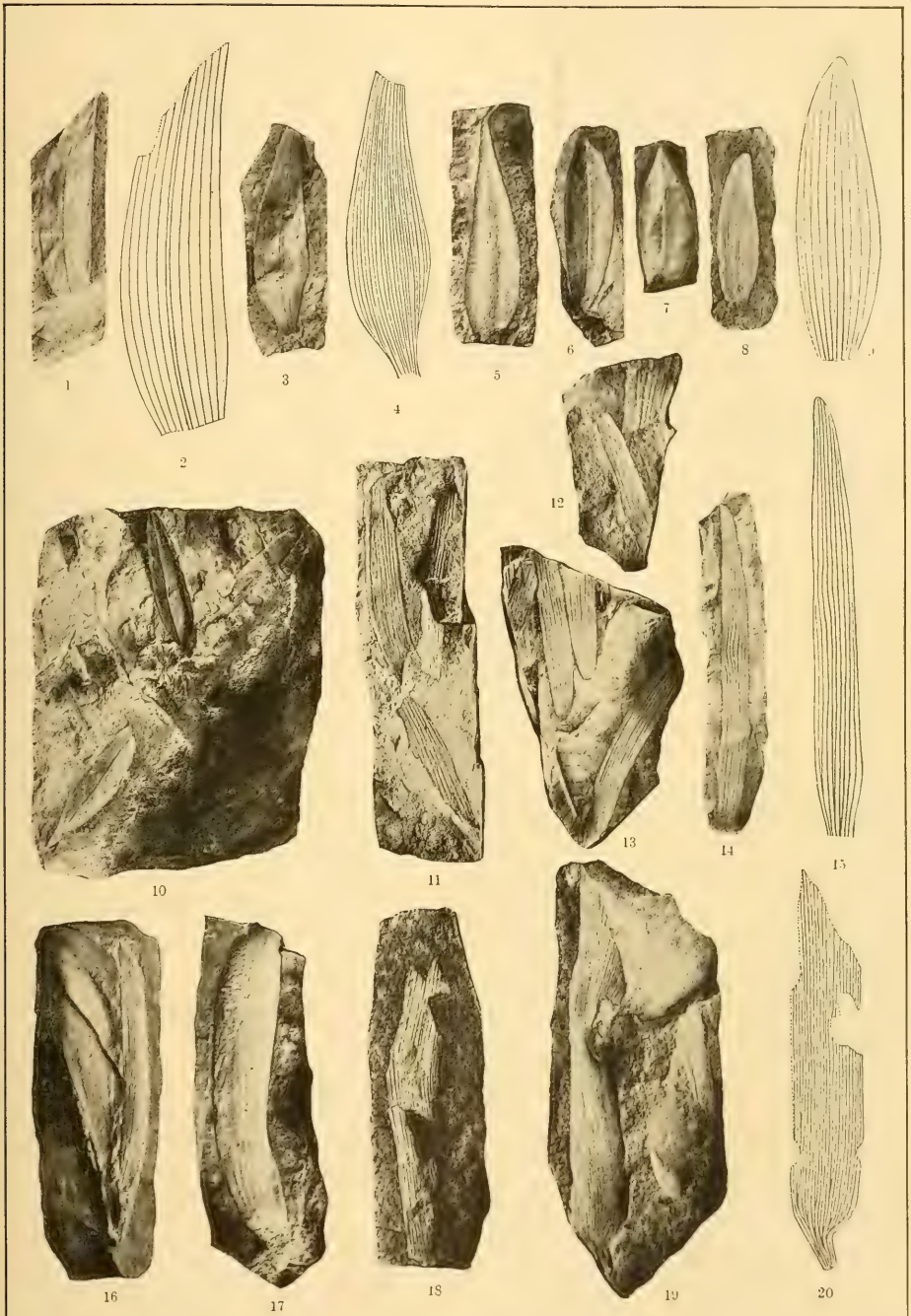

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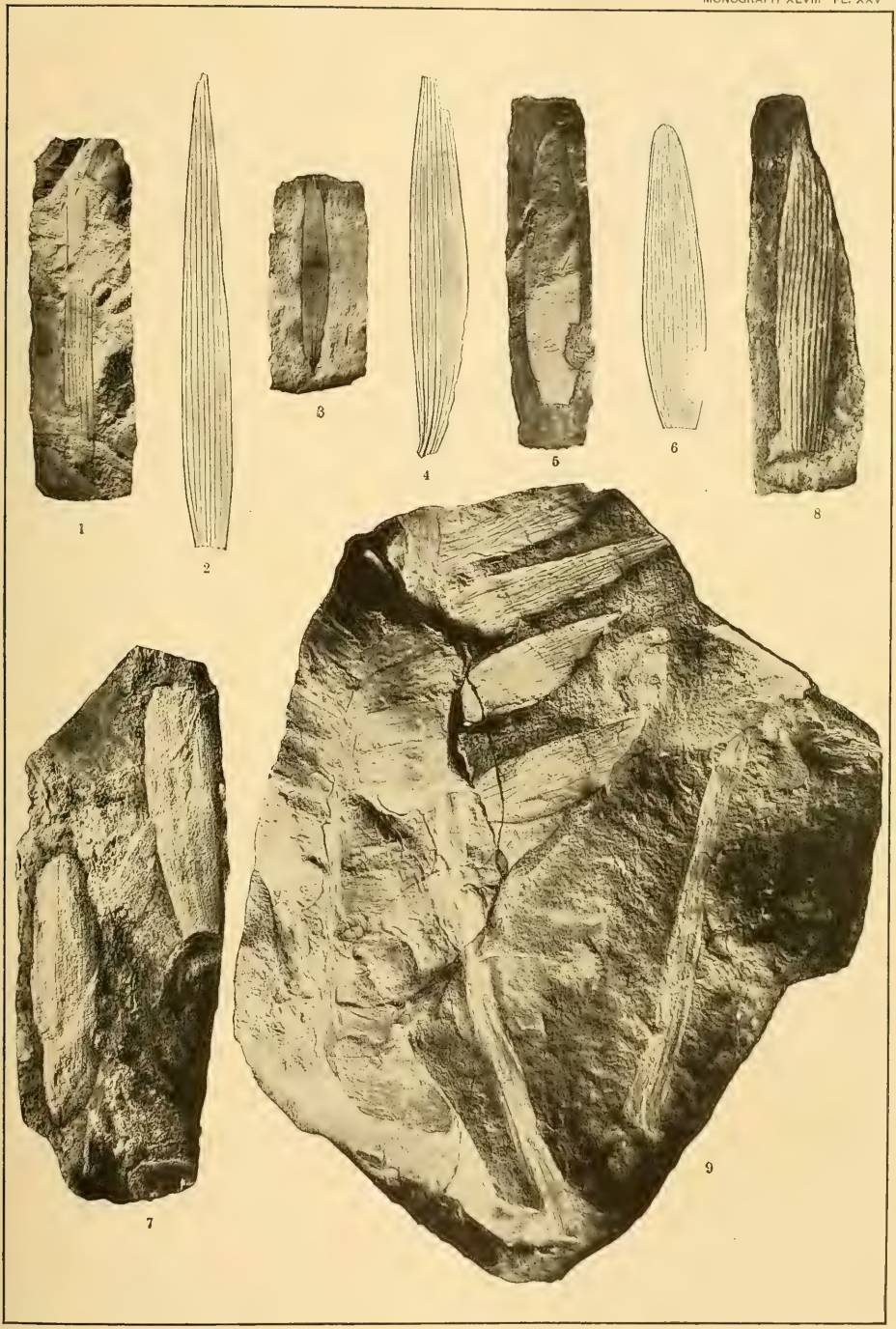

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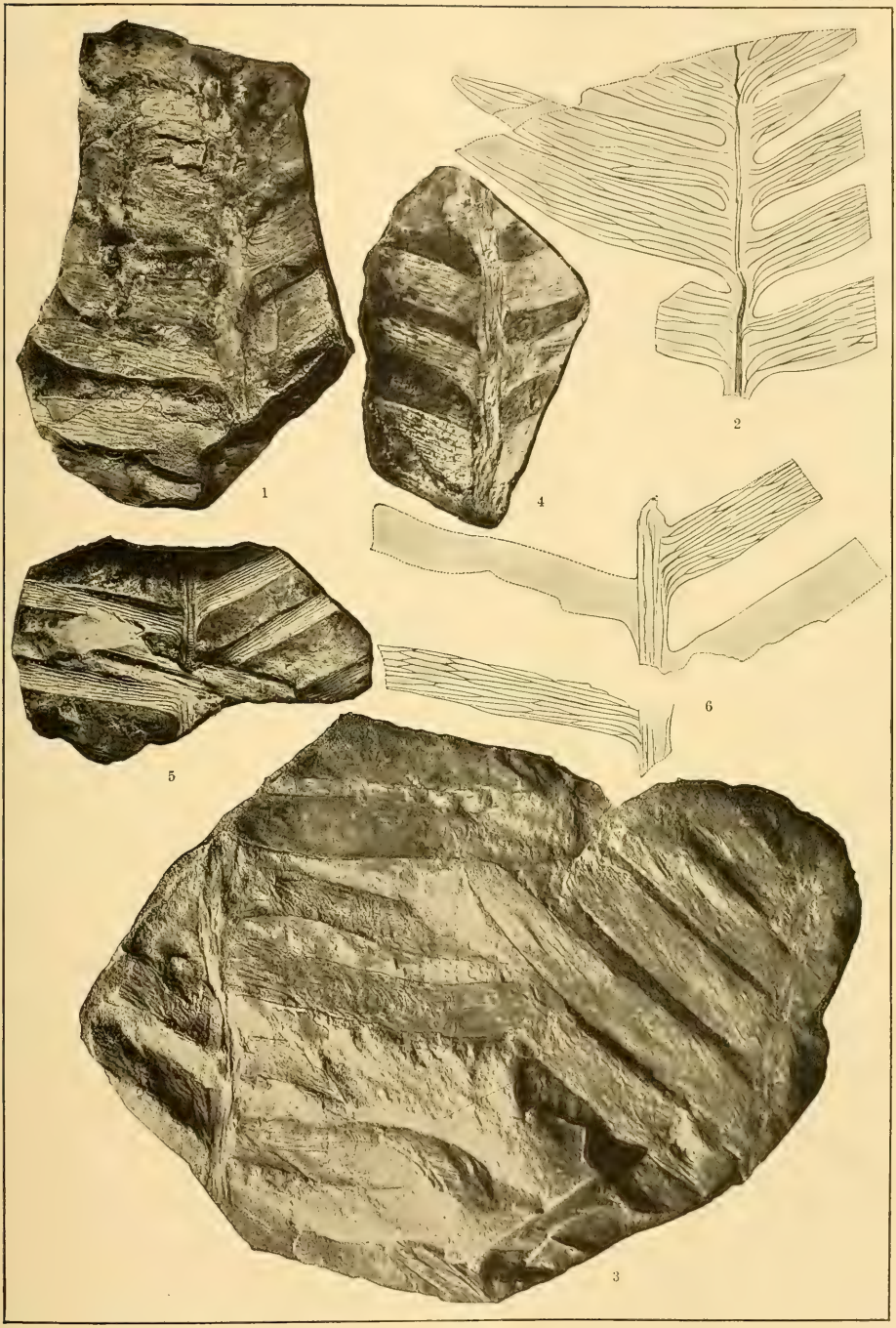

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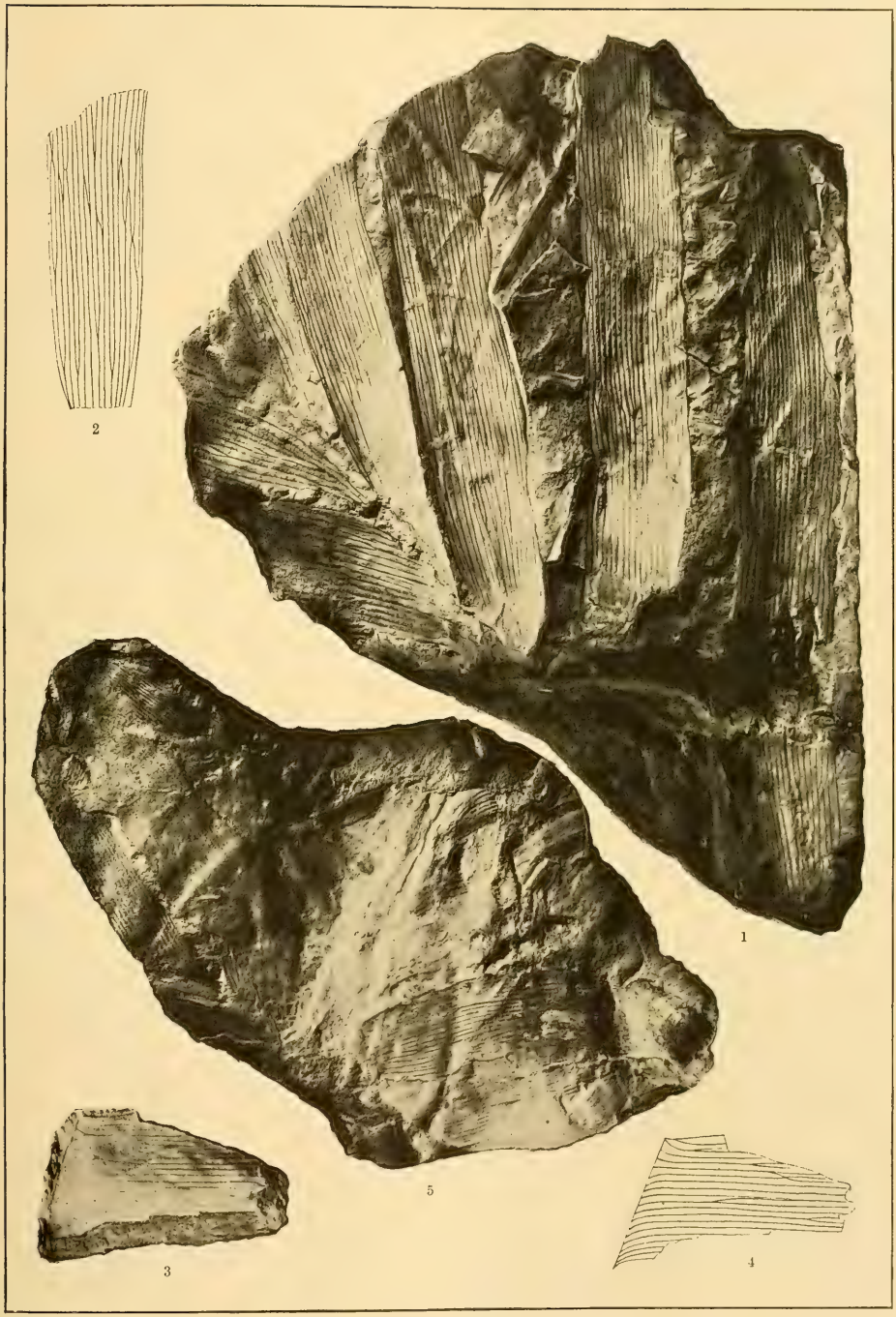

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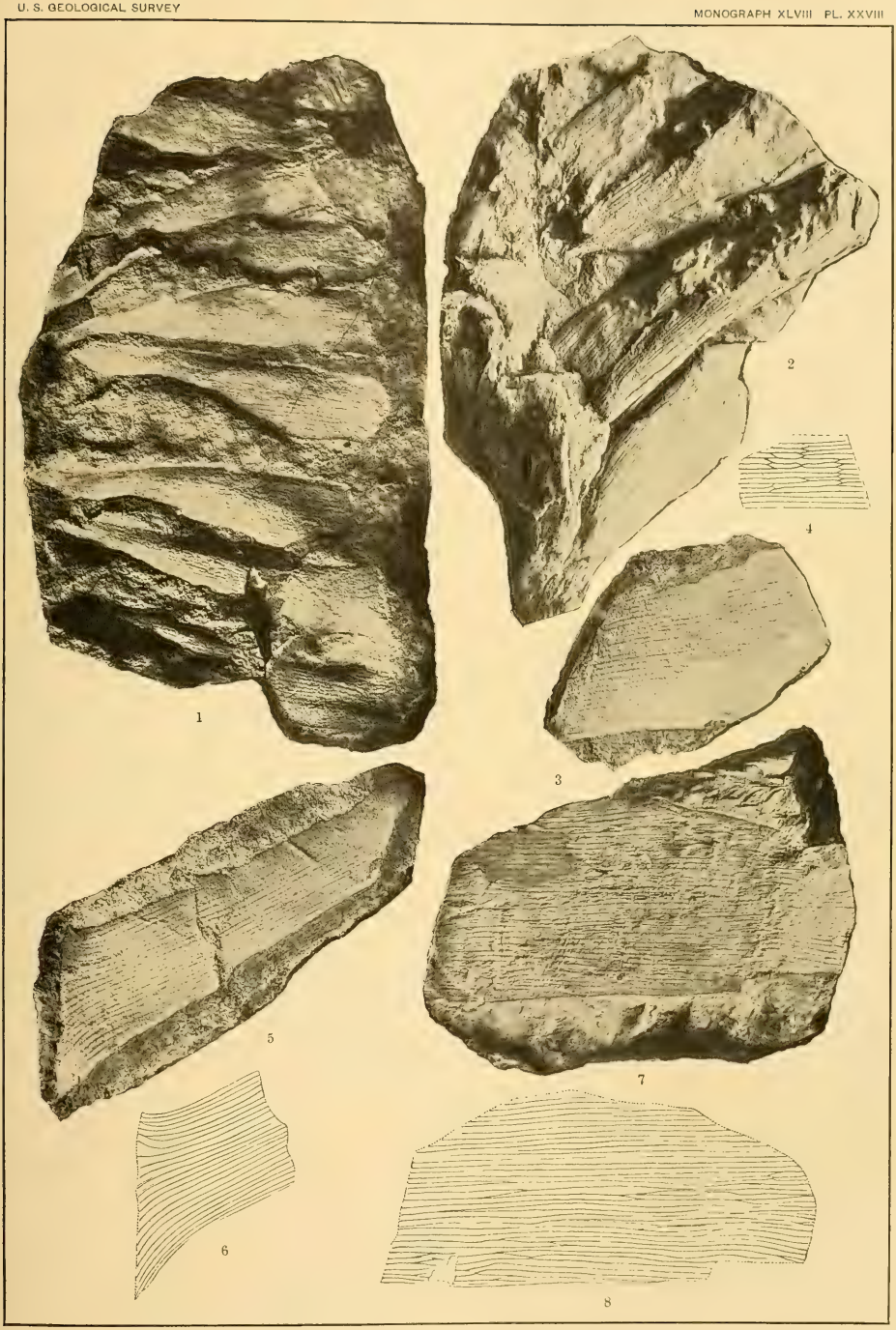

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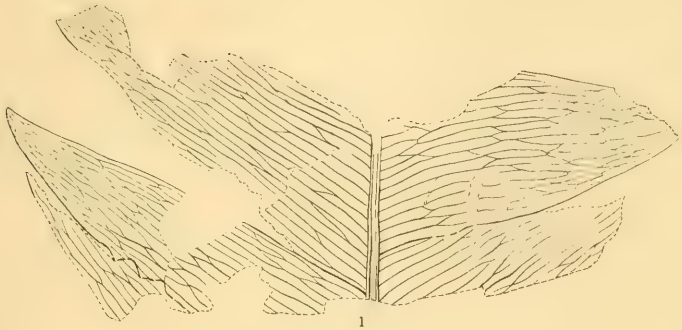
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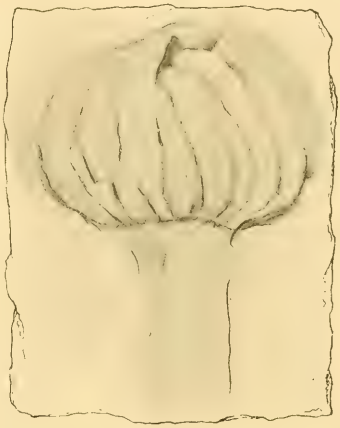
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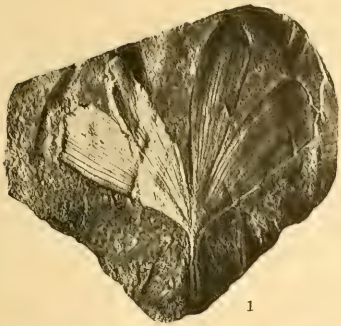

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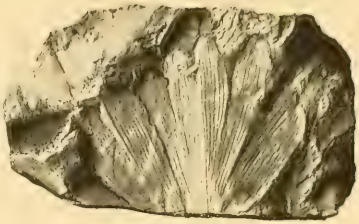

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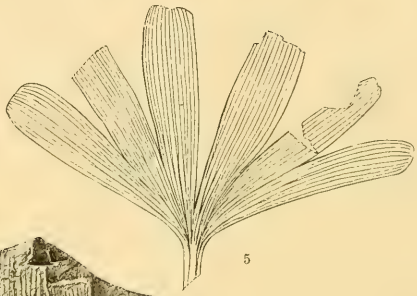

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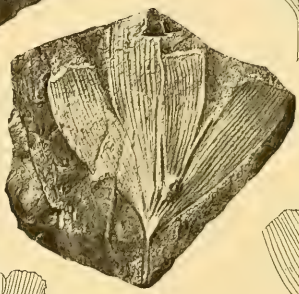

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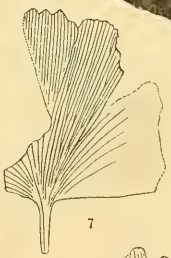

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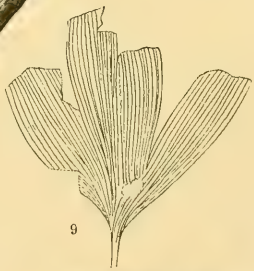

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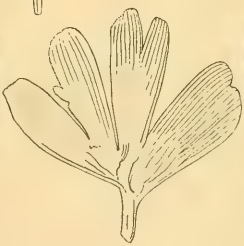

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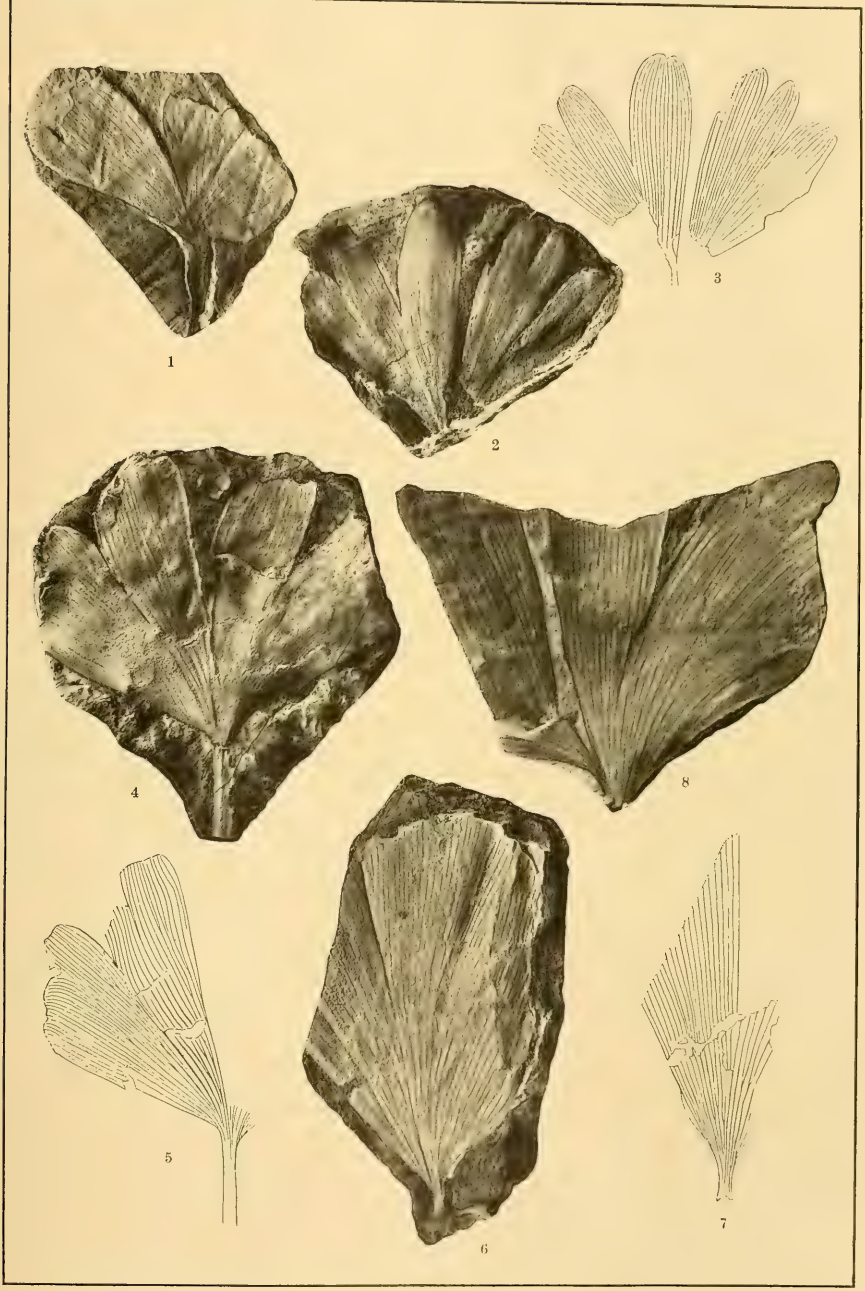

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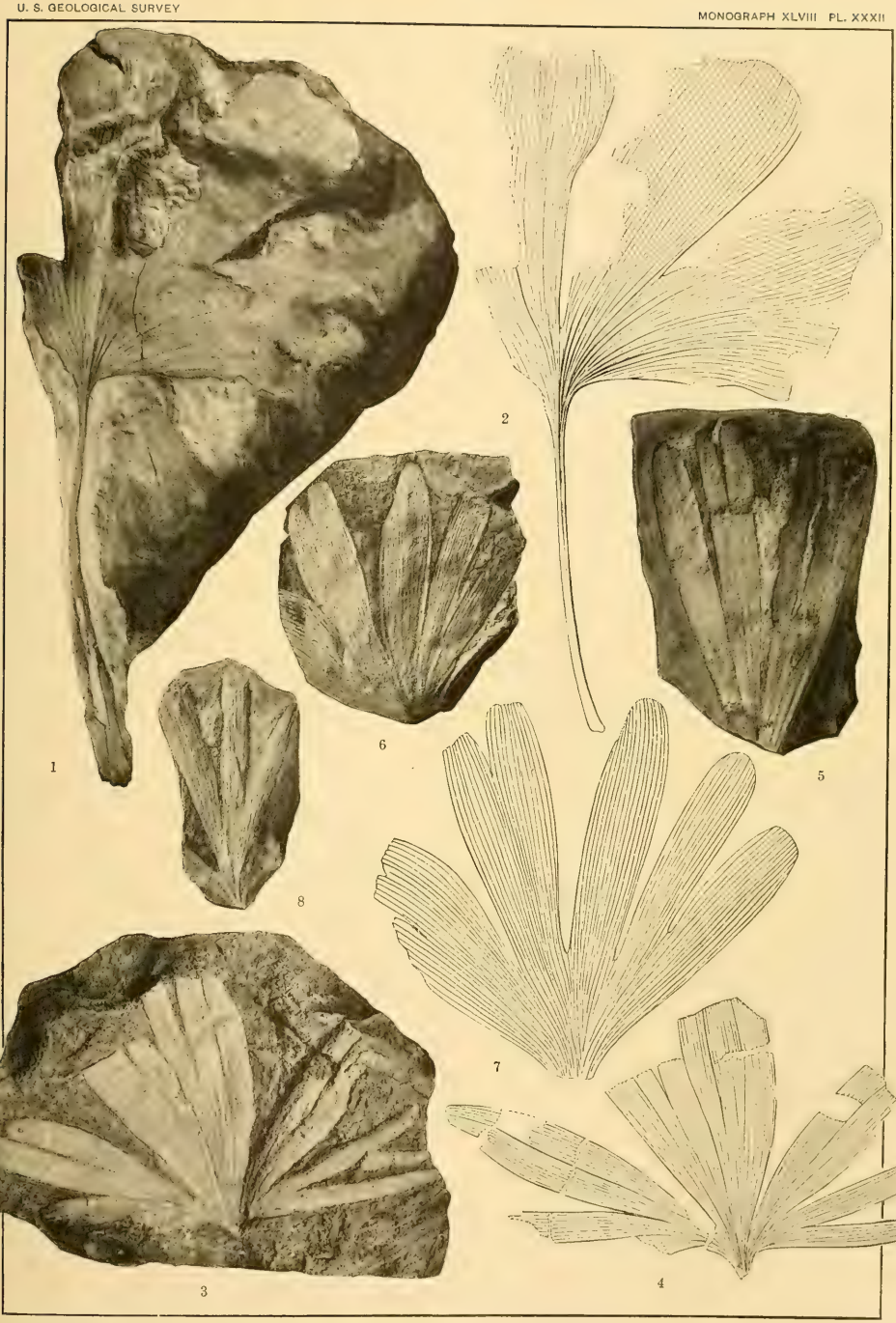

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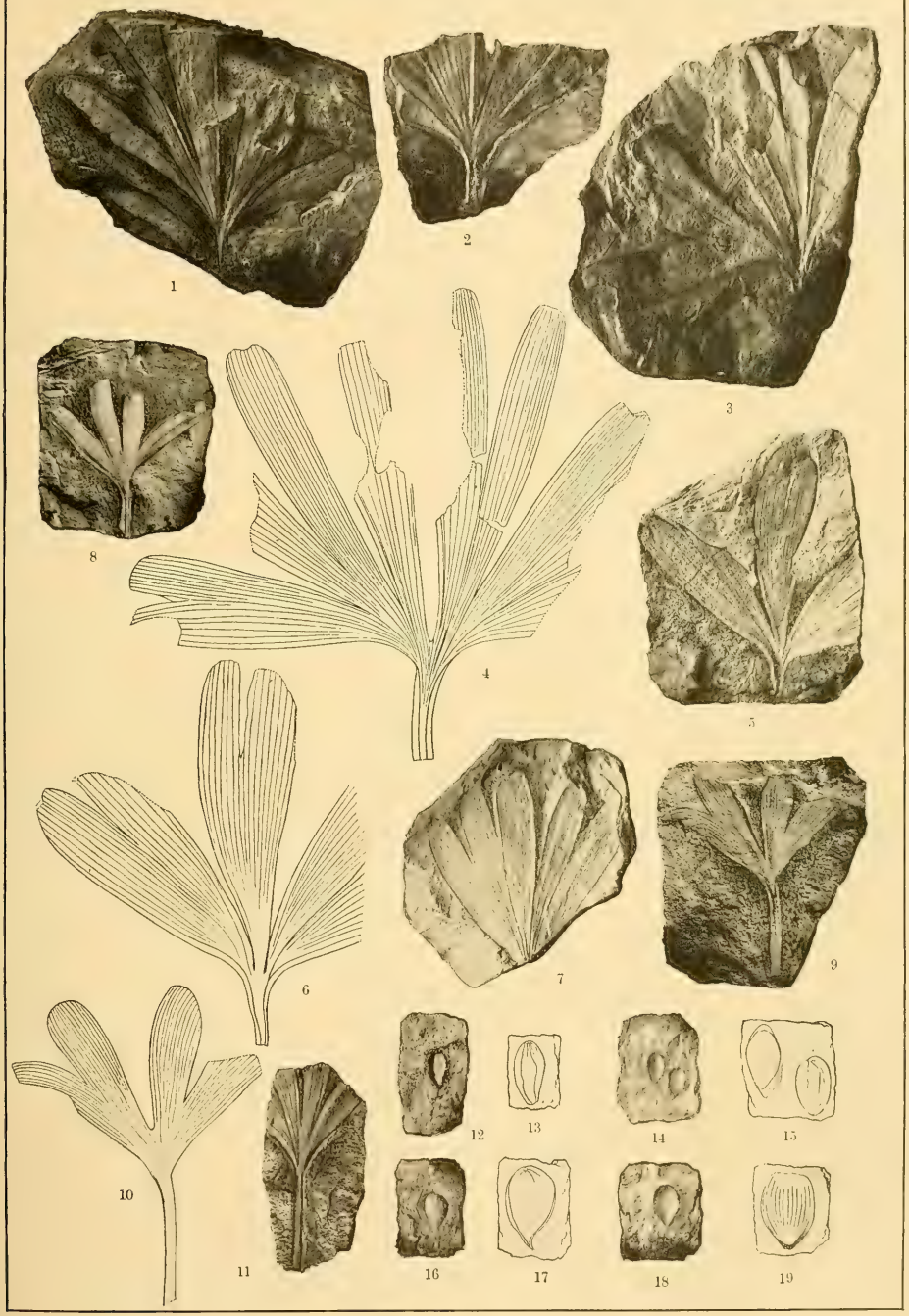

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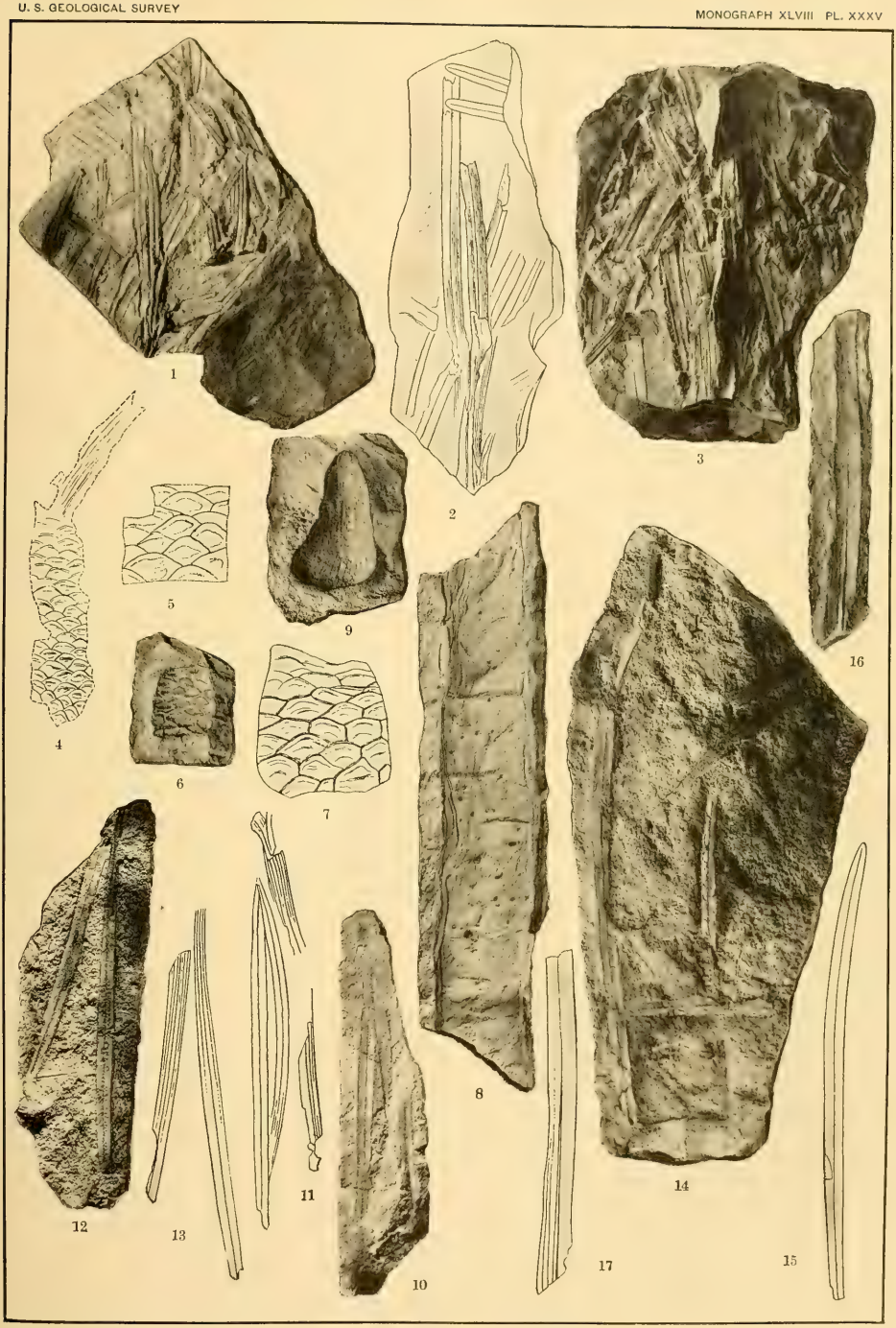

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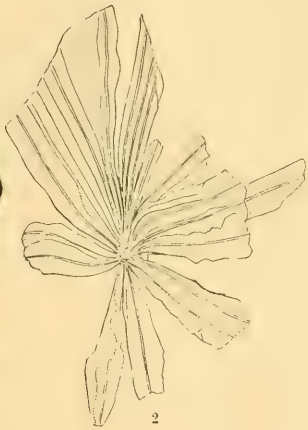
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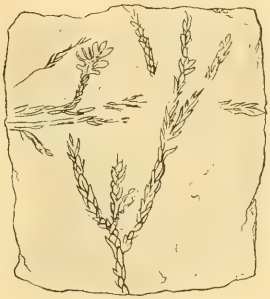
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JURASSIC CONIFERS FROM OREGON.

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PLATE XXXVII.

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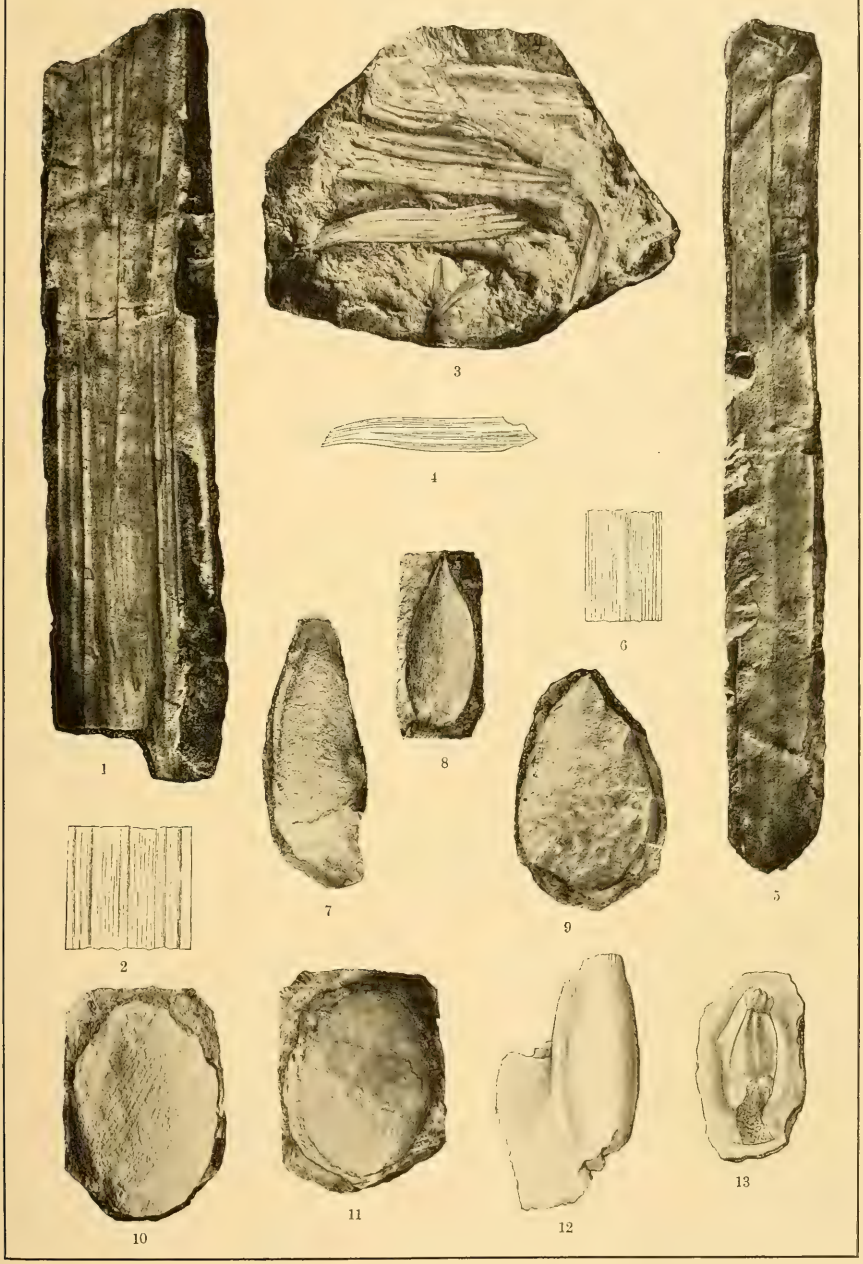

MISCELLANEOUS JURASSIC PLANTS FROM OREGON.

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PLATE XXXVIII.

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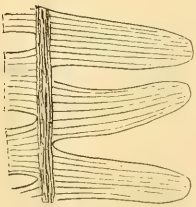
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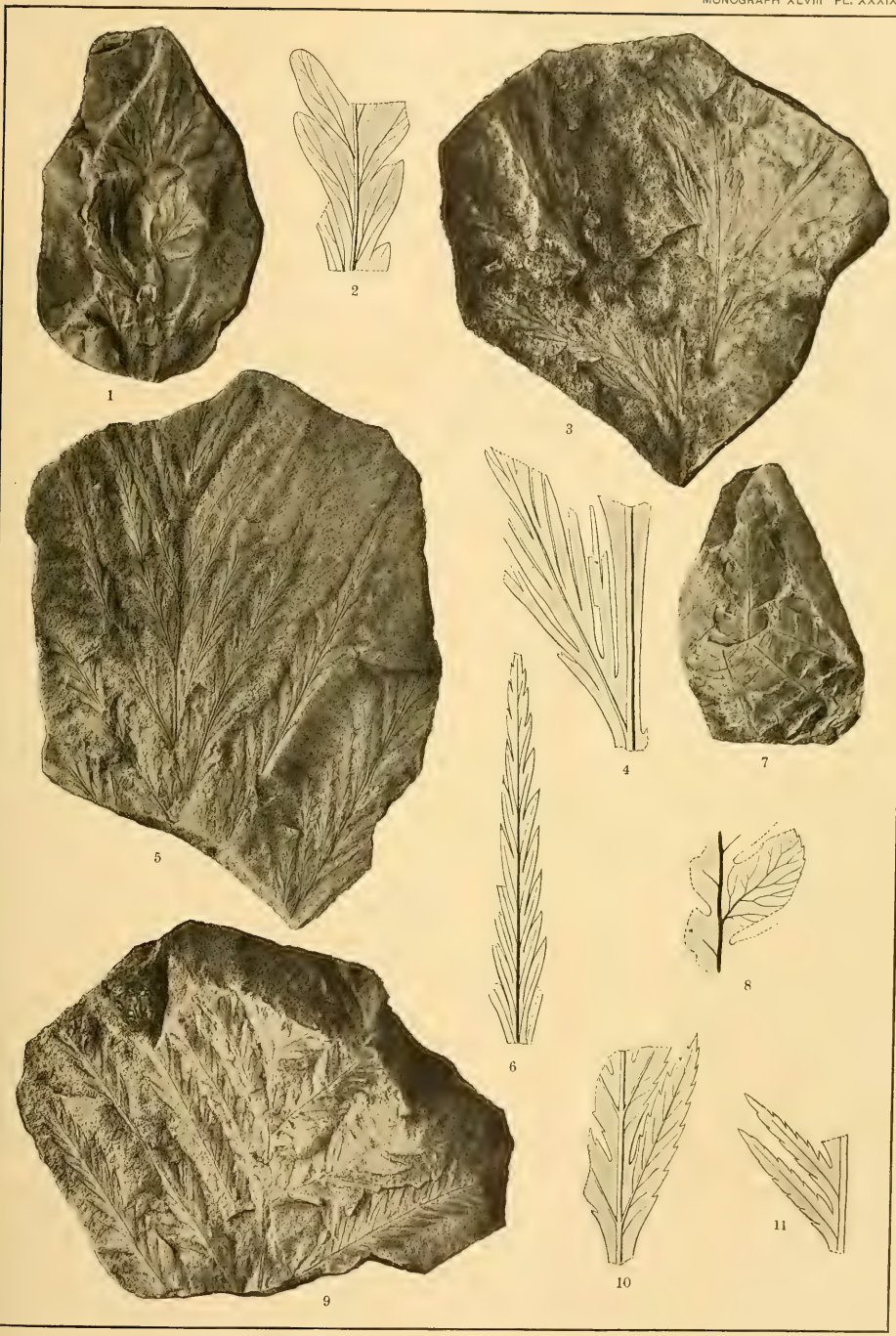

JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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PLATE XL.

Jurasso-Cretaceous Flora of Cape Lisburne, Alaska.

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Fig. 2. Enlarged portion of Fig. 1, × 2.

Fig. 4. Enlarged portion of Fig. 3, × 2.

Fig. 6. Enlarged portion of Fig. 5, × 3.

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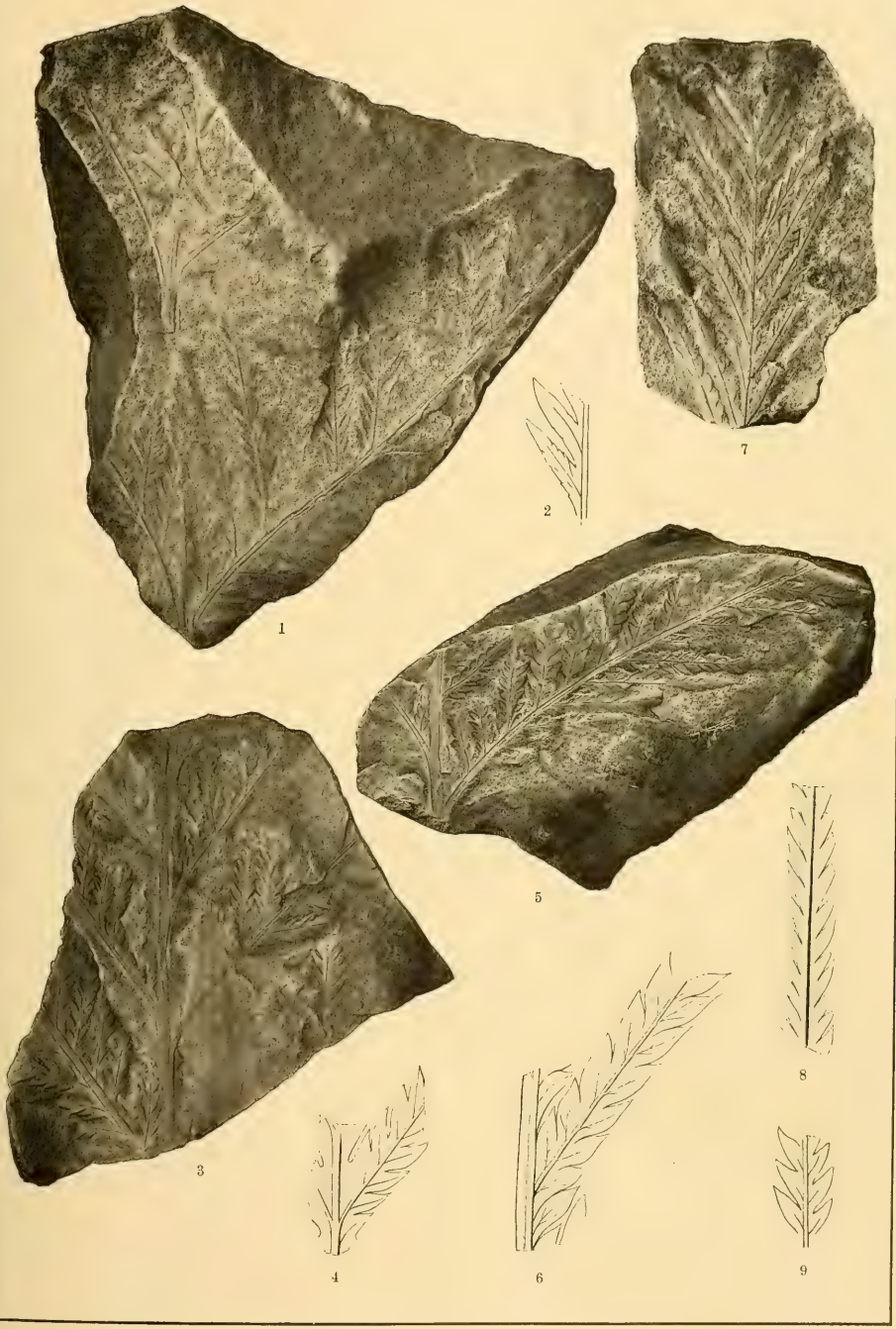

JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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Jurasso-Cretaceous Flora of Cape Lisburne, Alaska.

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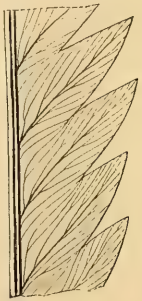
Fig. 3. Pinnule of Fig. 1 enlarged, $\times 2$.

Fig. 4. Pinnule of Fig. 1 enlarged and restored $\times \frac{3}{2}$.

Fig. 5. Portion of Fig. 1 enlarged and restored $\times \frac{3}{2}$.



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JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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Jurasso-Cretaceous Flora of Cape Lisburne, Alaska.

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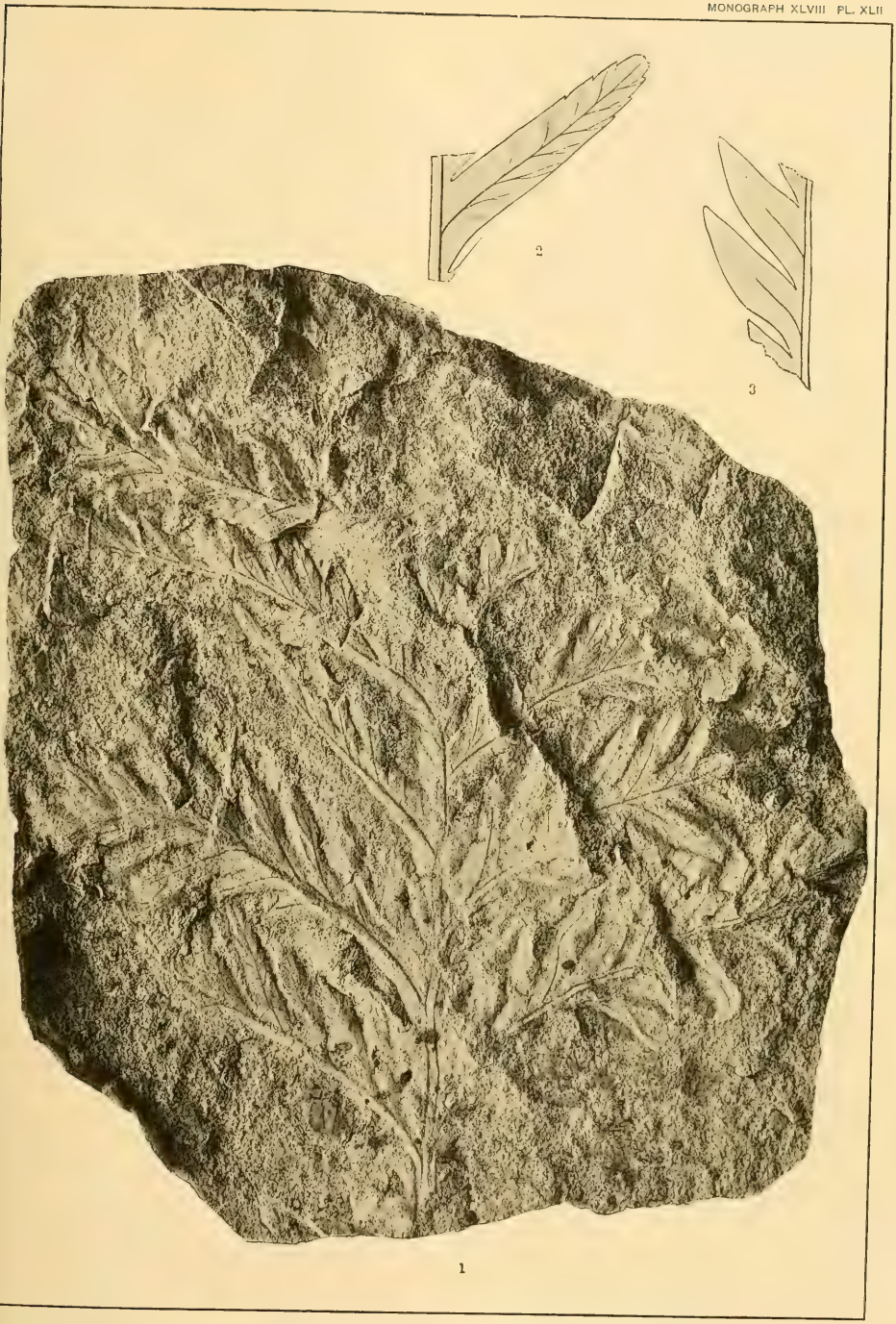
Figs. 1–3 Cladophlebis Huttoni (Dunk.) Font. n. comb 161

Fig. 2. Enlarged pinnule of Fig. 1, × 2.

Fig. 3. Portion of Fig. 1 enlarged and restored, × $\frac{3}{2}$.



JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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Figs. 1–7. Cladophlebis Huttoni (Dunk.) Font. n. comb 161

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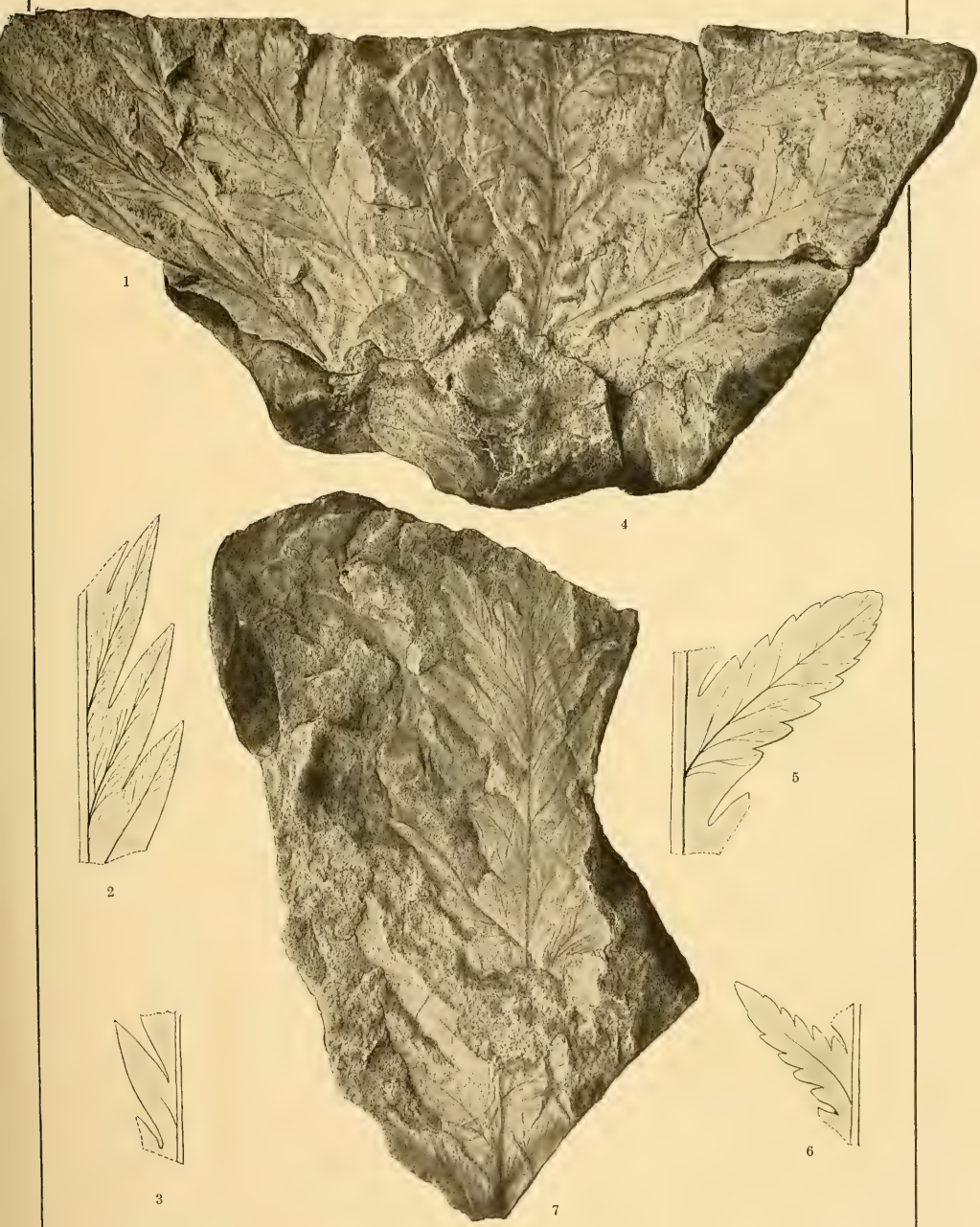
Fig. 3. Pinnule of Fig. 1 restored and slightly enlarged.

Fig. 5. Enlarged pinnule of Fig. 4, × 2.

Fig. 6. Pinnule of Fig. 4 restored and slightly enlarged.



JURASSO-CRETACEOUS FERNS FROM CAPE LISBURNE, ALASKA.

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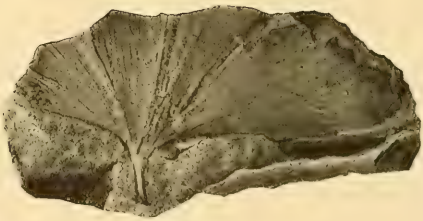

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JURASSO-CRETACEOUS CYCADS AND GINGKOACEÆ FROM CAPE LISBURNE, ALASKA.

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Jurasso-Cretaceous Flora of Alaska, Montana, and California.

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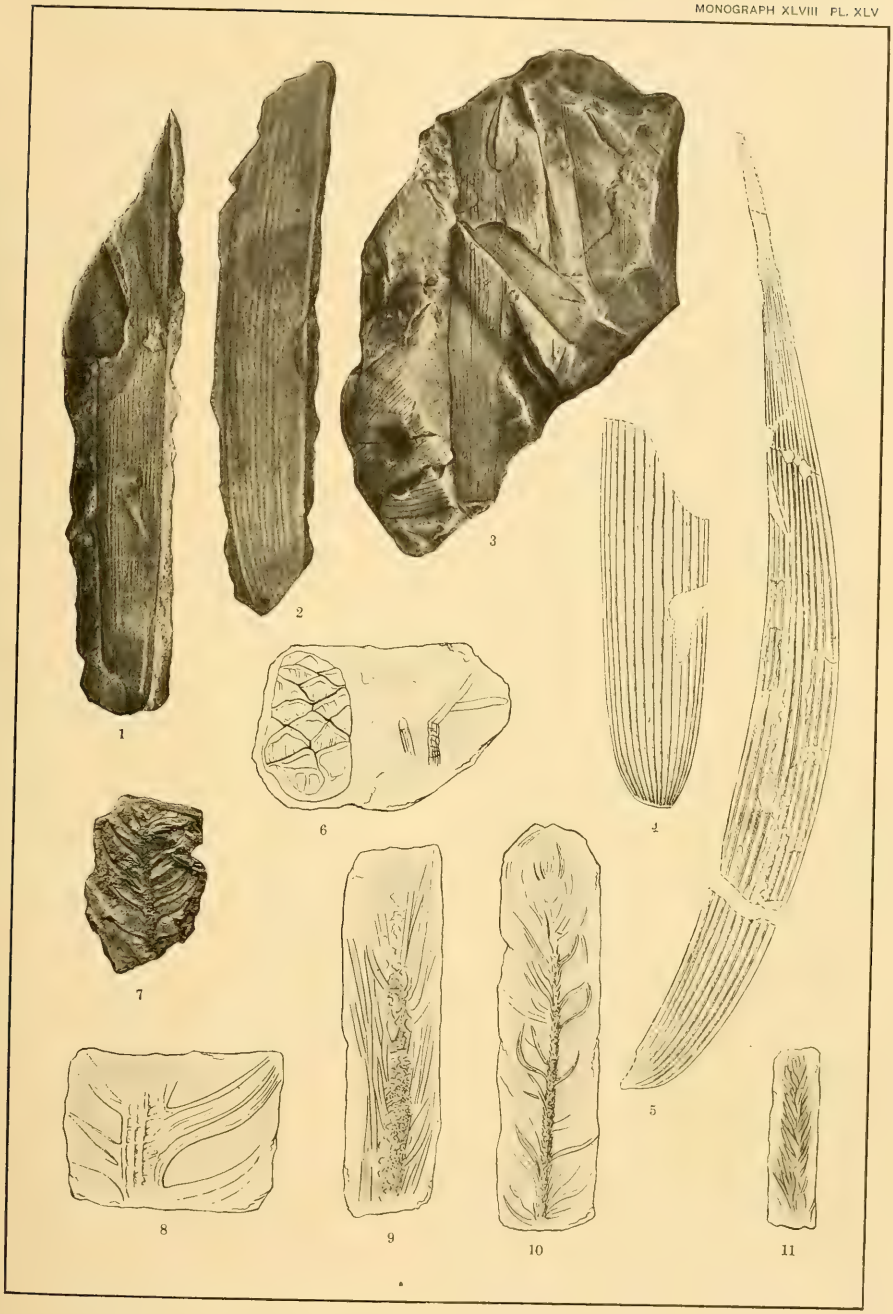

JURASSO-CRETACEOUS CONIFERS FROM ALASKA, MONTANA, AND CALIFORNIA.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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View of one side and part of the base of the trunk consisting of Nos. 500.88, 500.513, and 500.525 of the museum of the University of Wyoming.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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Side views of the fragments Nos. 500.94 and 500.498, respectively, of the museum of the University of Wyoming.

Fig. 3. Cycadella Reedii Ward 182
Side view of the small trunk No. 100.239 of the museum of the University of Wyoming.

Fig. 4. Cycadella compressa Ward 186
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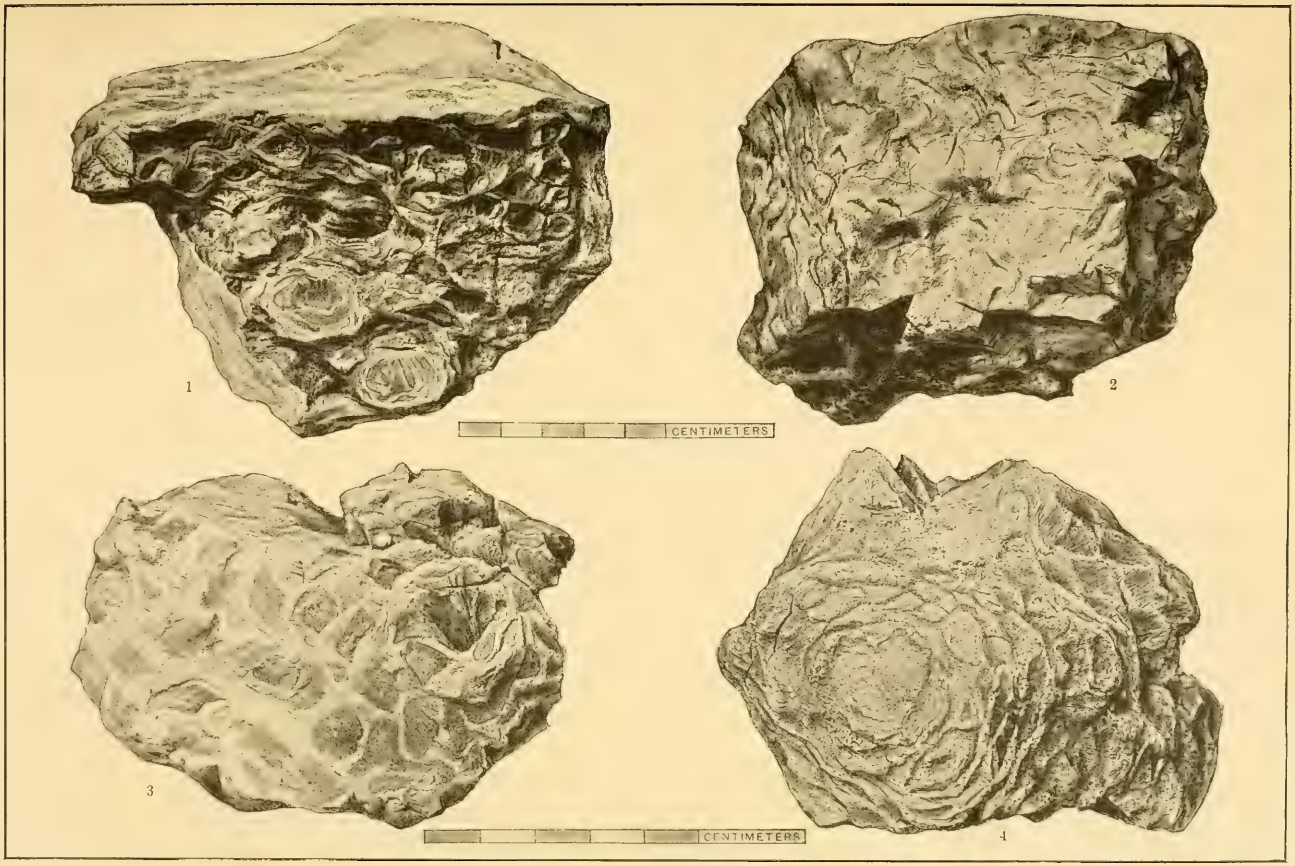

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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Cycadella compressa Ward..... 186

Fig. 1. Side and top view of the small trunk No. 500.503 of the museum of the University of Wyoming.

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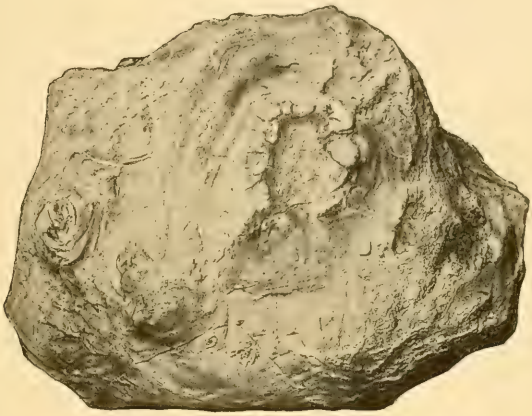

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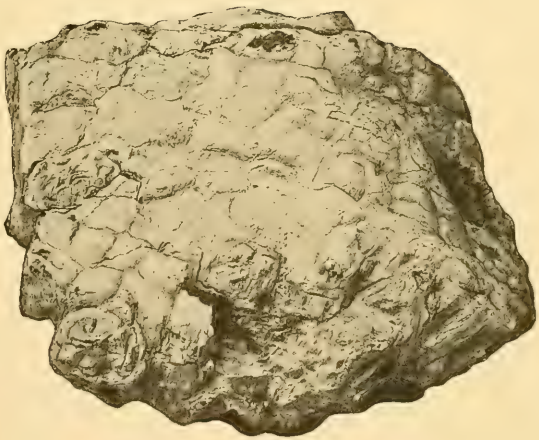

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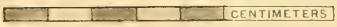

JURASSIC CYCADS FROM WYOMING.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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Cycadella jurassica Ward 186

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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Cycadella nodosa Ward..... 187

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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Cycadella nodosa Ward. 187

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Figs. 3, 4. Views of the internal structure shown in the fractures of Nos. 500.422 and 500.136, respectively, of the museum of the University of Wyoming.

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Figs. 2, 3. Views of the radial fractures of the two fragments Nos. 500.416 and 500.174, respectively, of the museum of the University of Wyoming, showing the exogenous structure and woody wedges.

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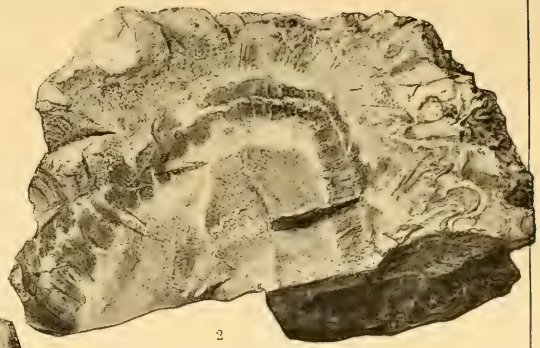

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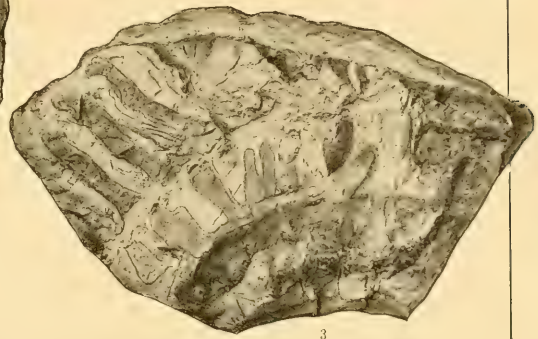

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CENTIMETERS

CENTIMETERS

JURASSIC CYCADS FROM WYOMING.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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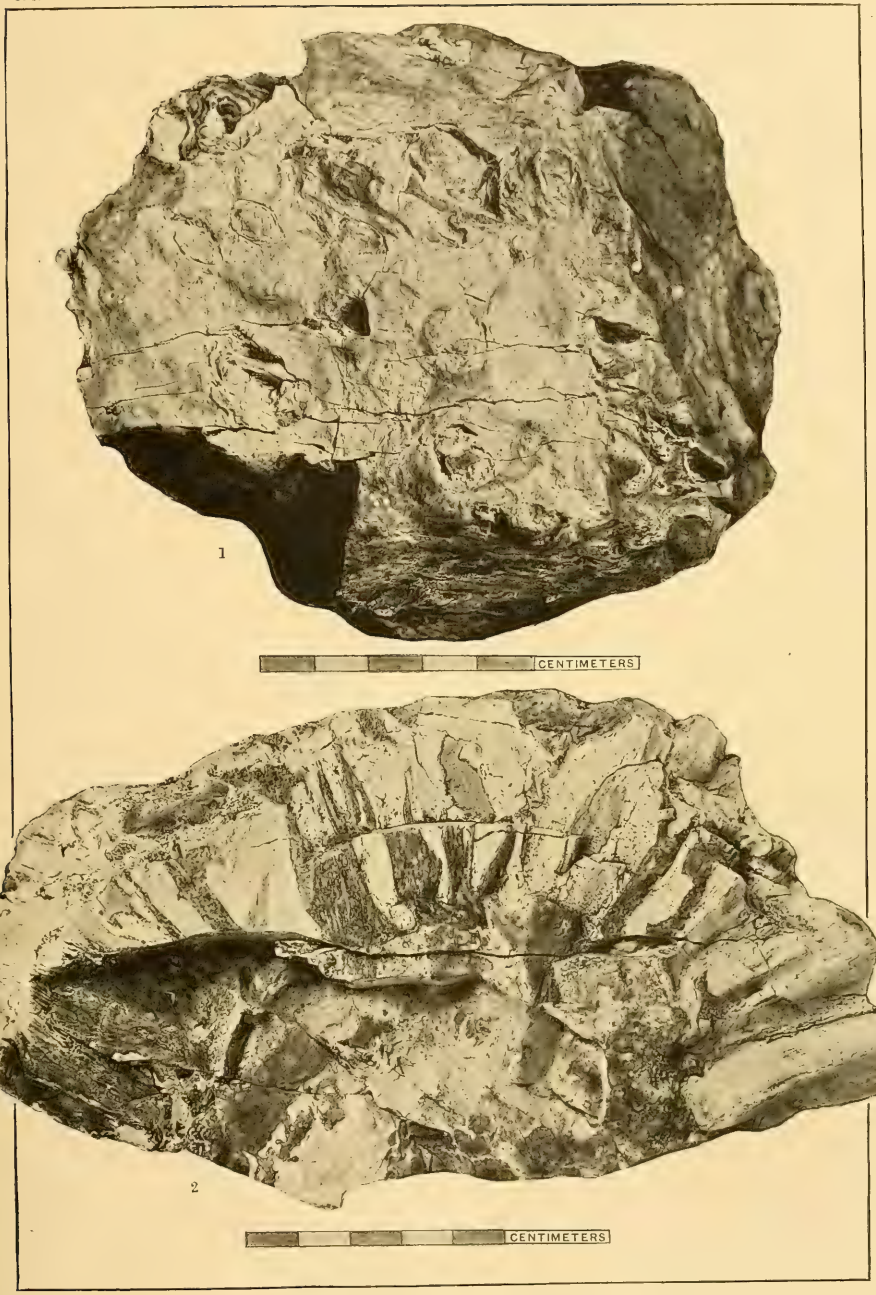
Fig. 1. Side view of the trunk No. 100.214 of the museum of the University of Wyoming.

Fig. 2. View of the rough radial fracture of the fragment No. 100.201 of the museum of the University of Wyoming.



JURASSIC CYCADS FROM WYOMING.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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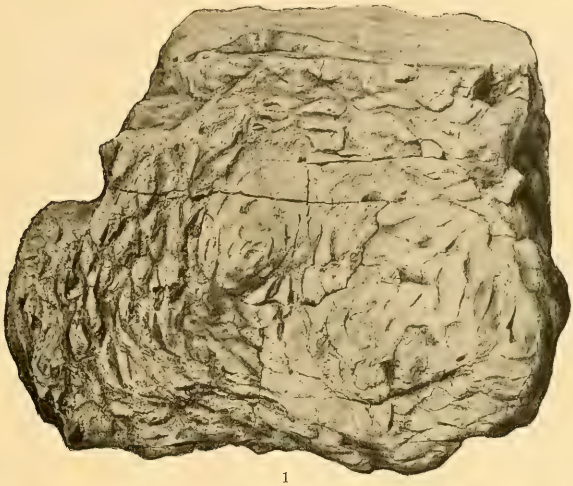

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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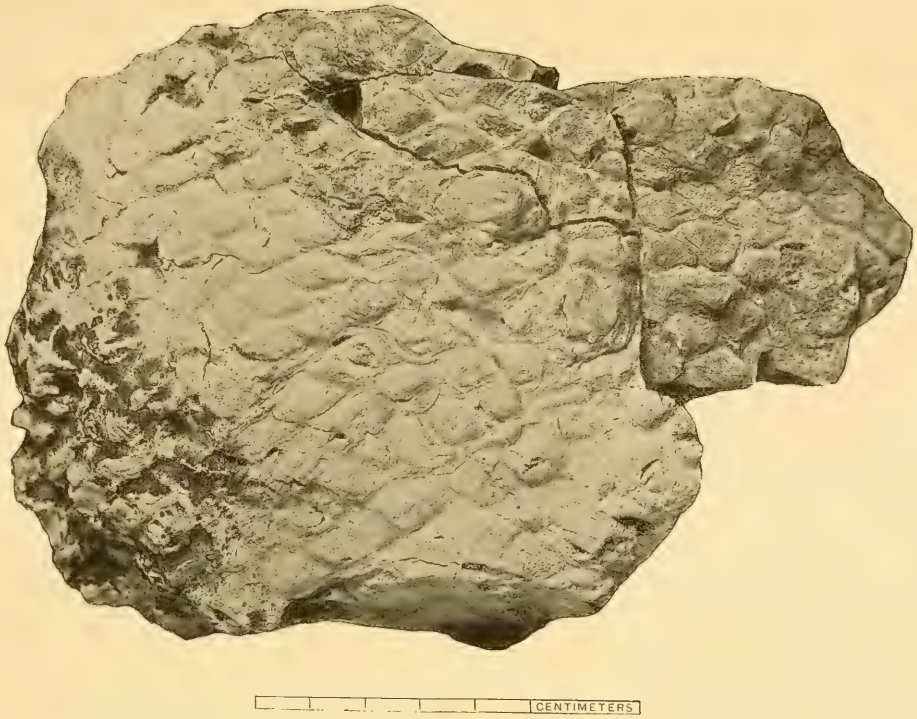
Cycadella jejuna Ward..... 194

Side view of the trunk consisting of Nos. 500.515 and 500.491 of the museum of the University of Wyoming.



JURASSIC CYCADS FROM WYOMING.

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Jurassic Cycads from the Freezeout Hills, Wyoming.

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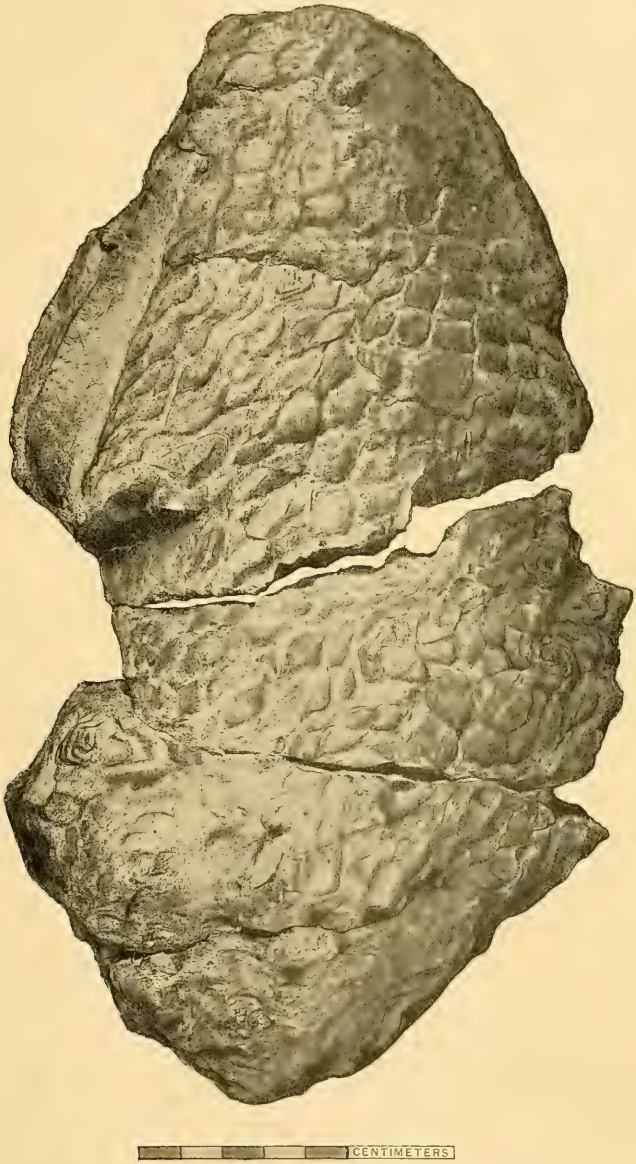
Cycadella crepidaria Ward..... 195

View of the best preserved side of the trunk, consisting of Nos. 100.202, 100.215 and 100.230 of the museum of the University of Wyoming.



JURASSIC CYCADS FROM WYOMING.

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JURASSIC CYCADS FROM THE FREEZEOUT HILLS, WYOMING.

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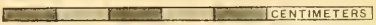
View of one side of the trunk No. 100.203 of the museum of the University of Wyoming.



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Jurassic Cycads from the Freezeout Hills, Wyoming.

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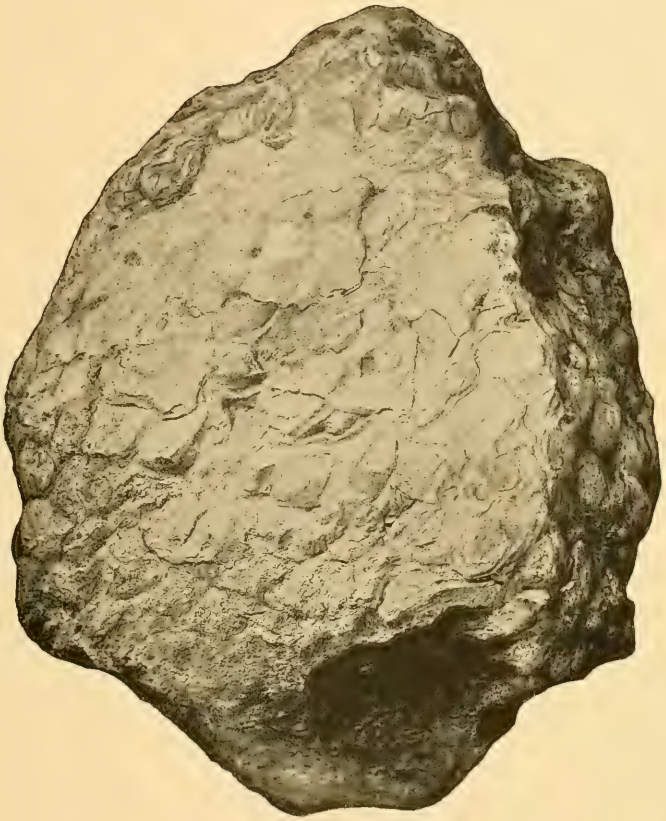
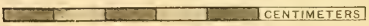
Cycadella crepidaria Ward..... 195

View of the convex side of the trunk No. 100.226 of the museum of the University of Wyoming





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Jurassic Cycads from the Freezeout Hills, Wyoming.

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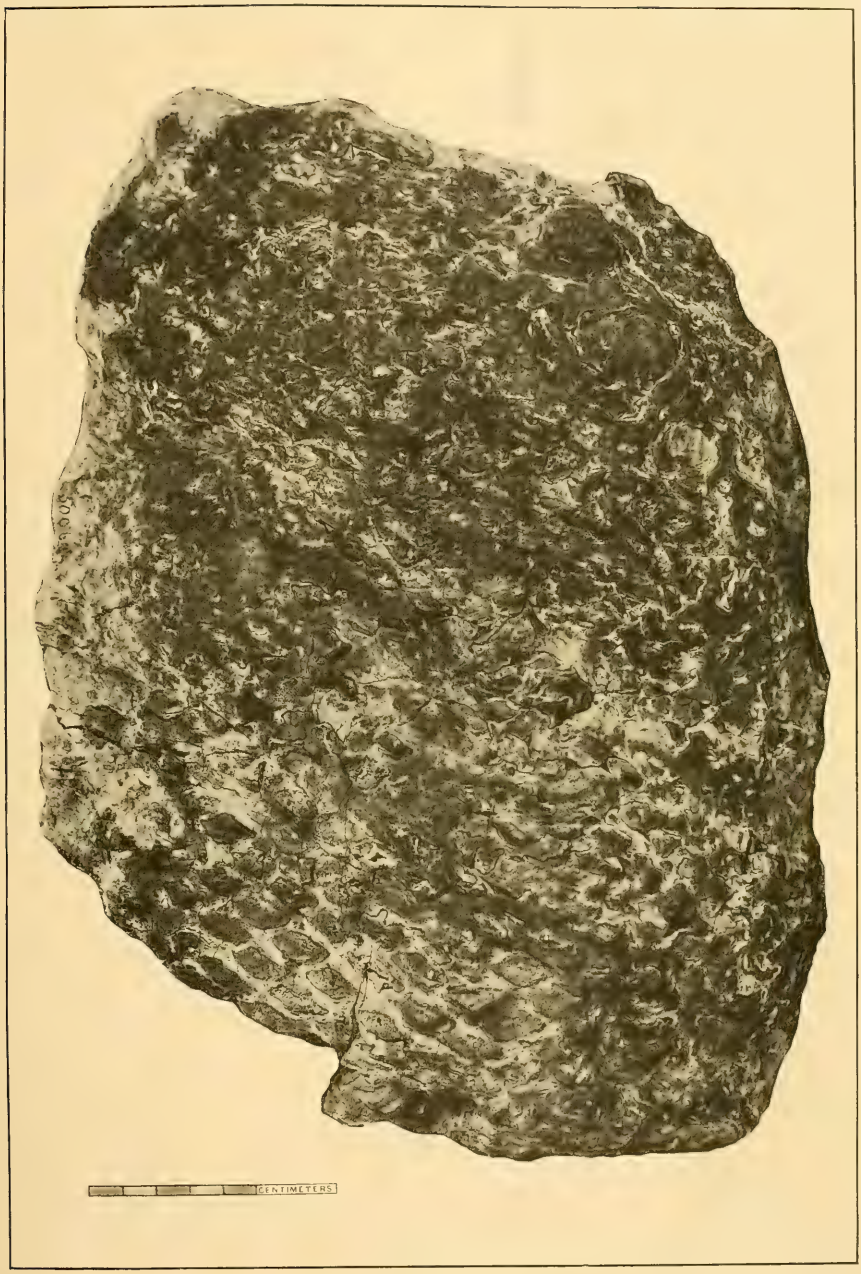
Cycadella Knighti Ward..... 197

View of the convex side of the trunk No. 500.687 of the museum of the University of Wyoming.



JURASSIC CYCADS FROM WYOMING.

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PLATE LXII.

Jurassic Cycads from the Freezeout Hills, Wyoming.

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Fig. 2. Transverse section of young frond, × 25.

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PLATE LXIII.

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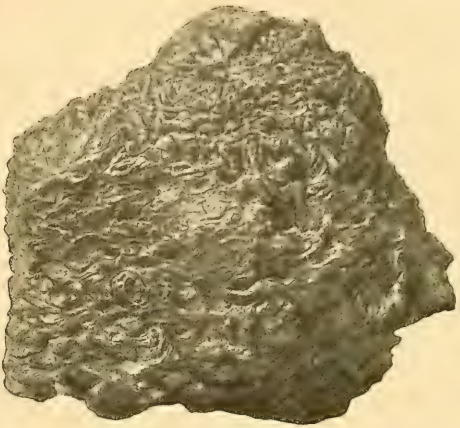
Fig. 1. Cycadella ramentosa Ward 200, 201, 202

Transverse section of young frond, × 25.

Fig. 2. Cycadella utopiensis Ward 204



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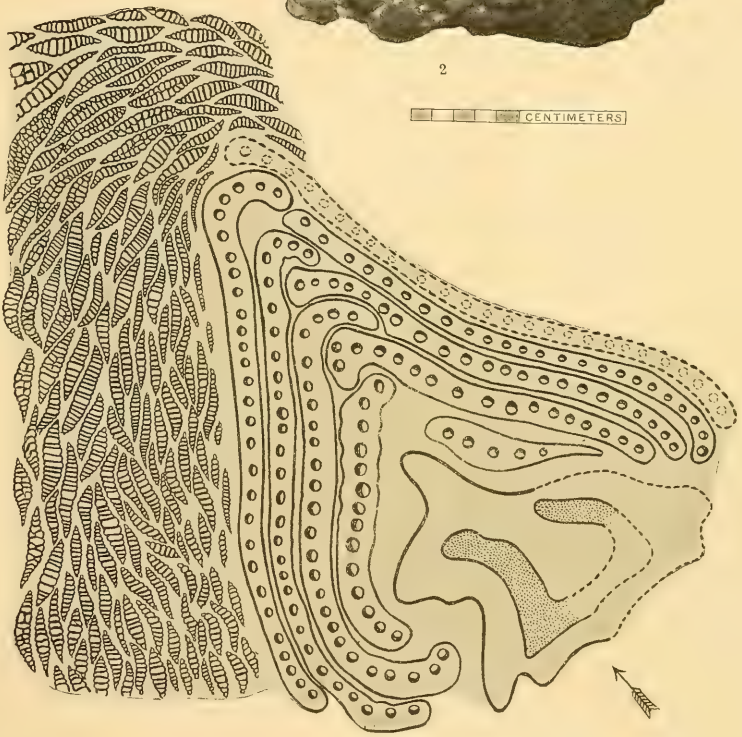

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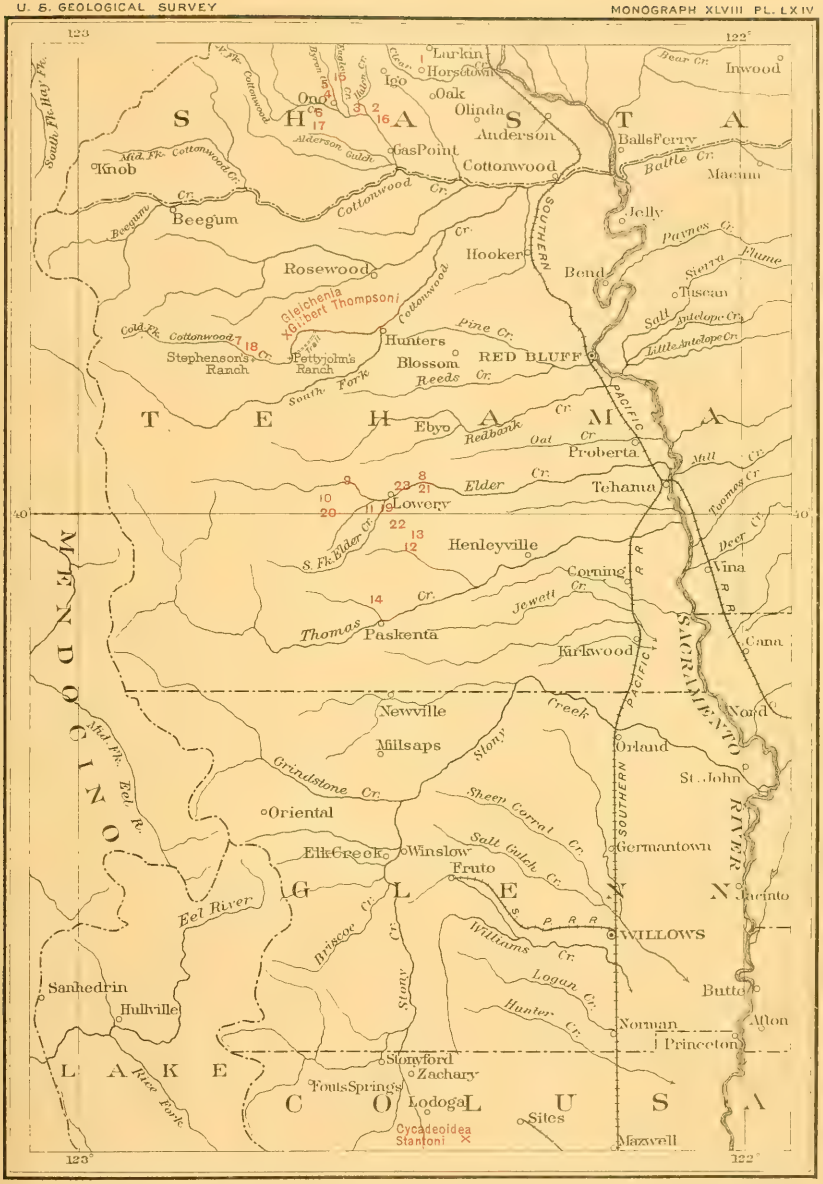

SKETCH MAP SHOWING FOSSIL LOCALITIES OF THE SHASTA FORMATION
NORTHERN CALIFORNIA

Scale

0 10 20 30 miles

A. HOEN & CO. BALTIMORE

PLATE LXV.

PLATE LXV.

Flora of the Shasta Formation.

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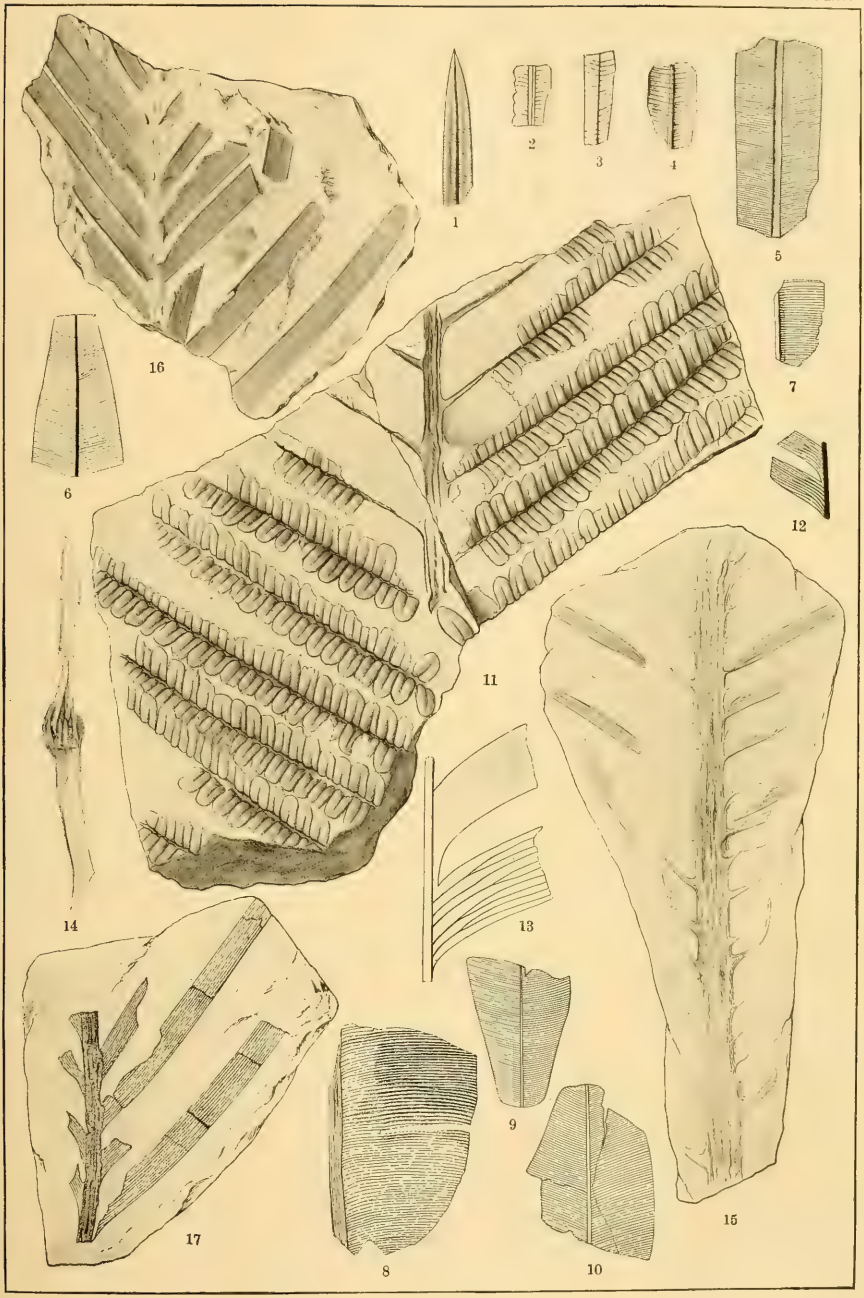

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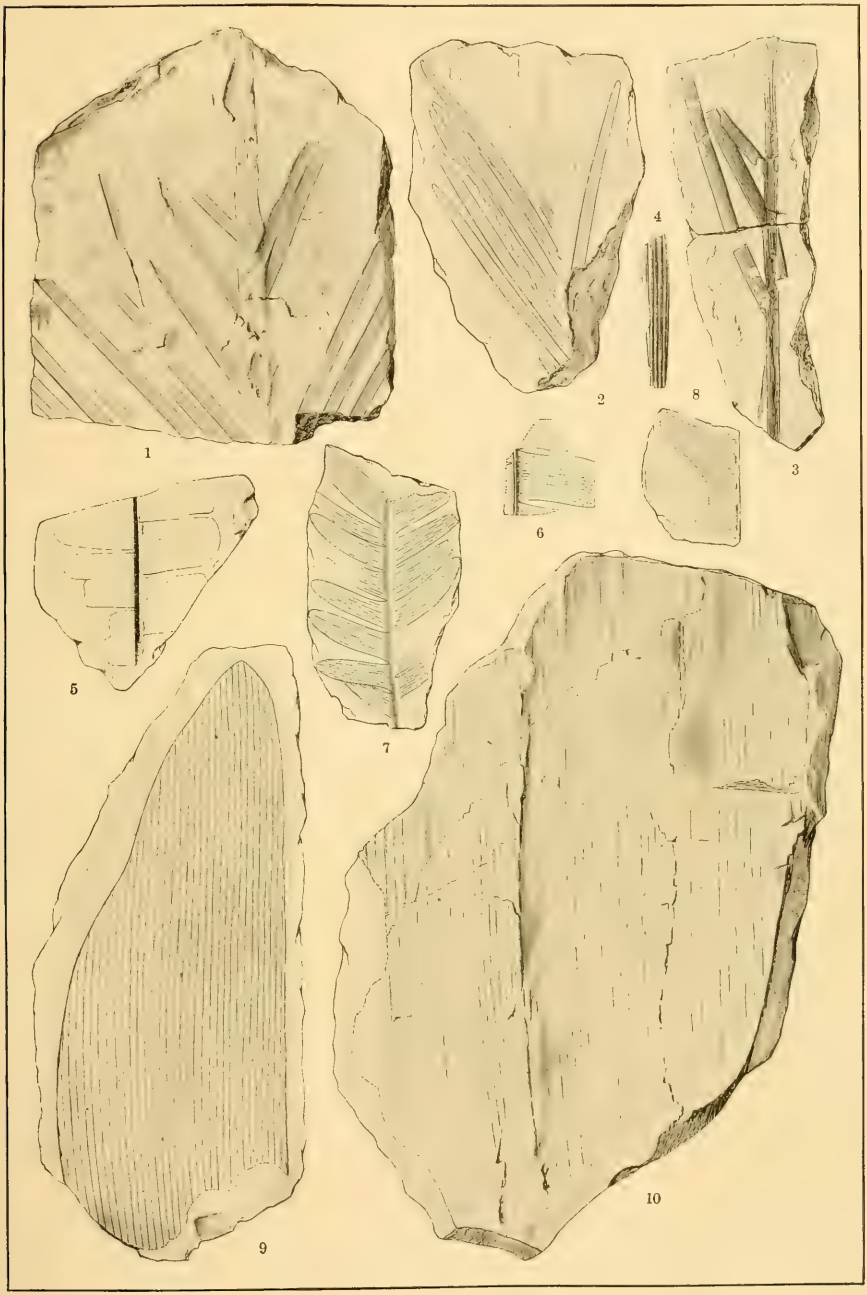

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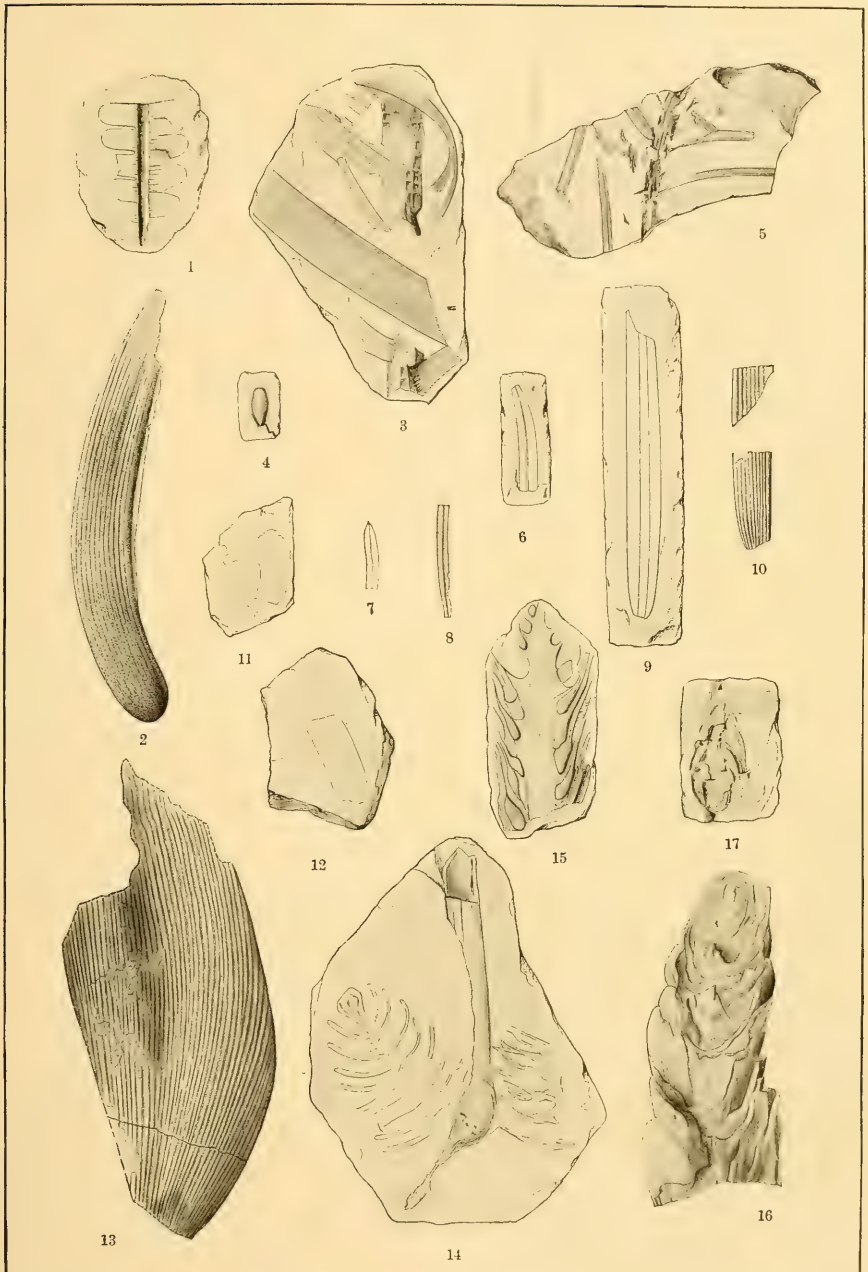

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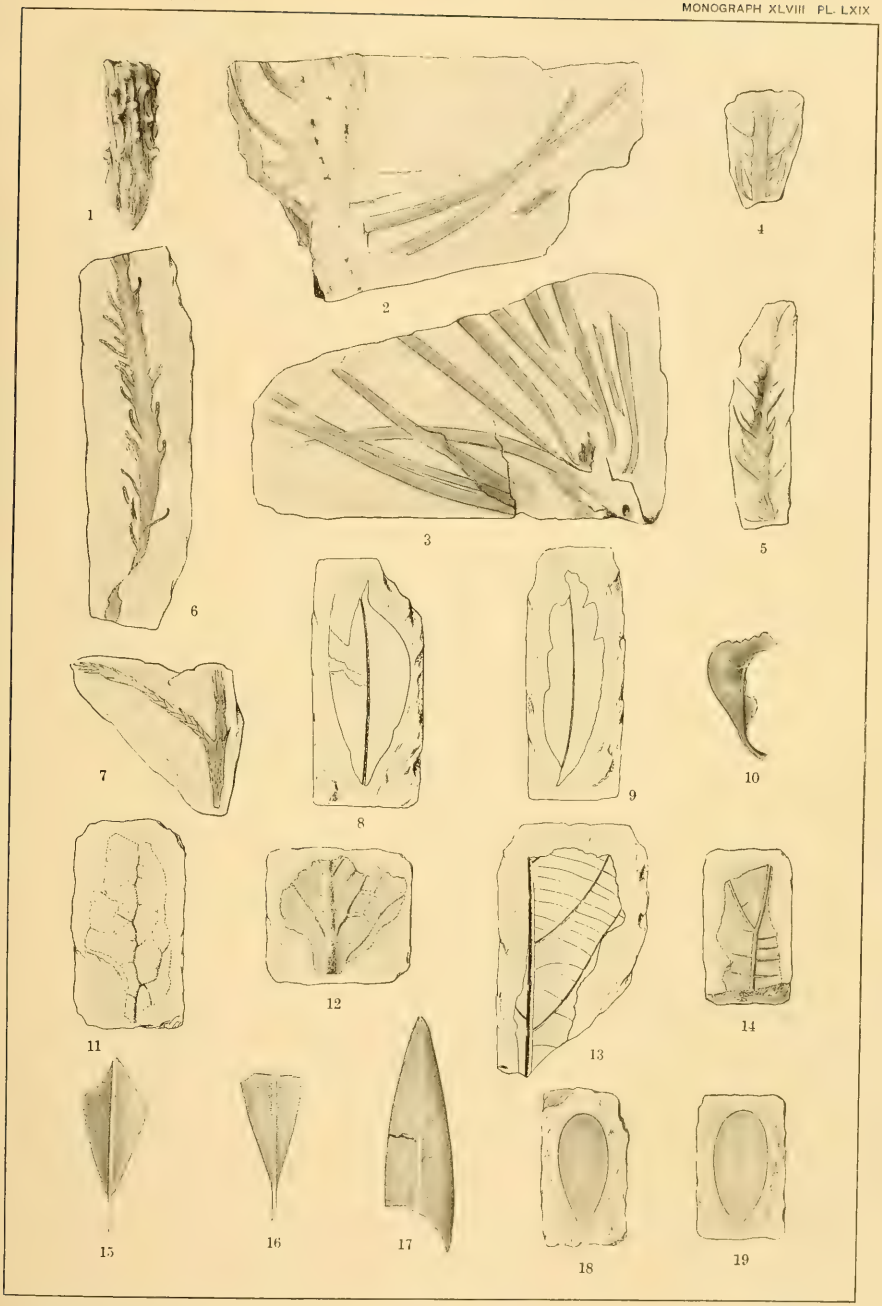

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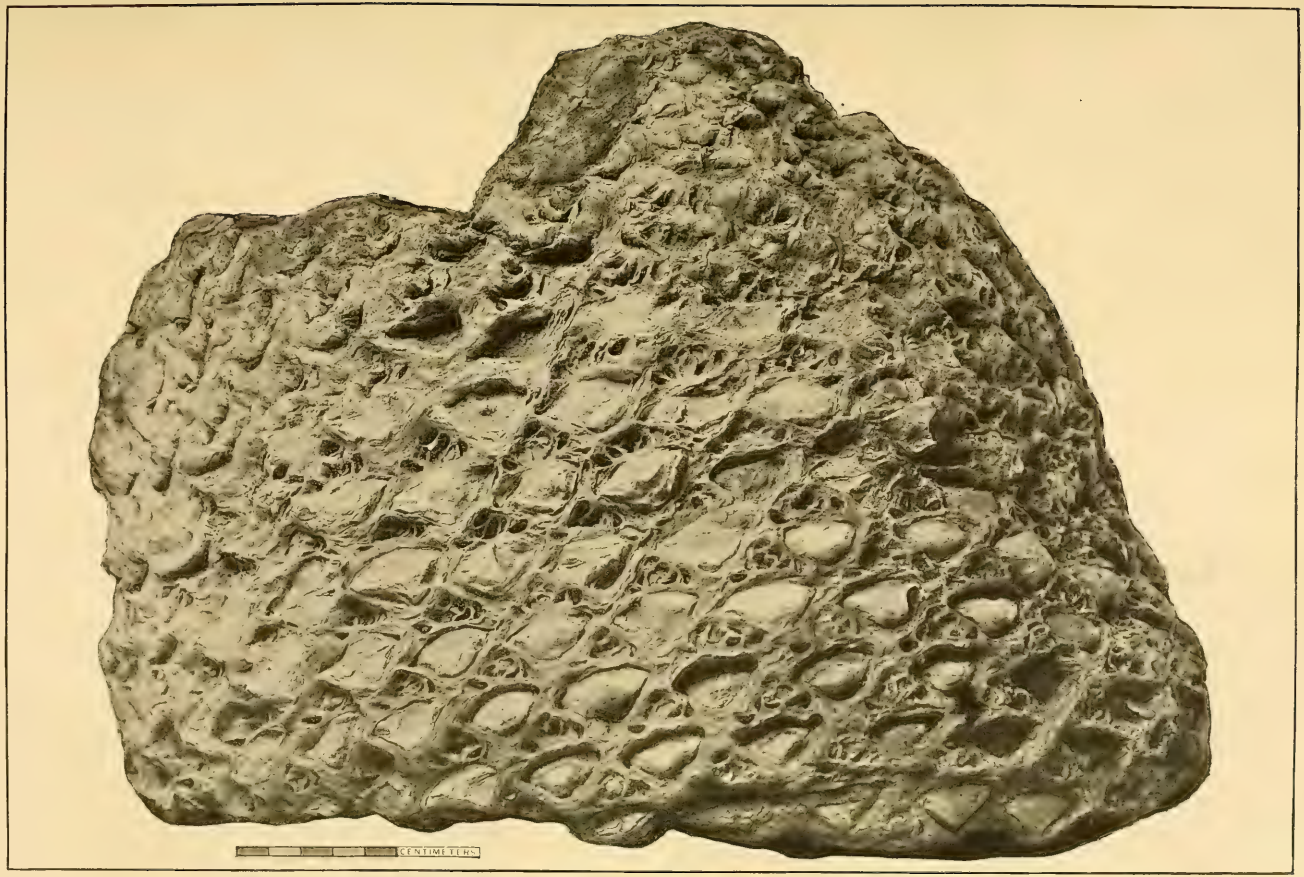

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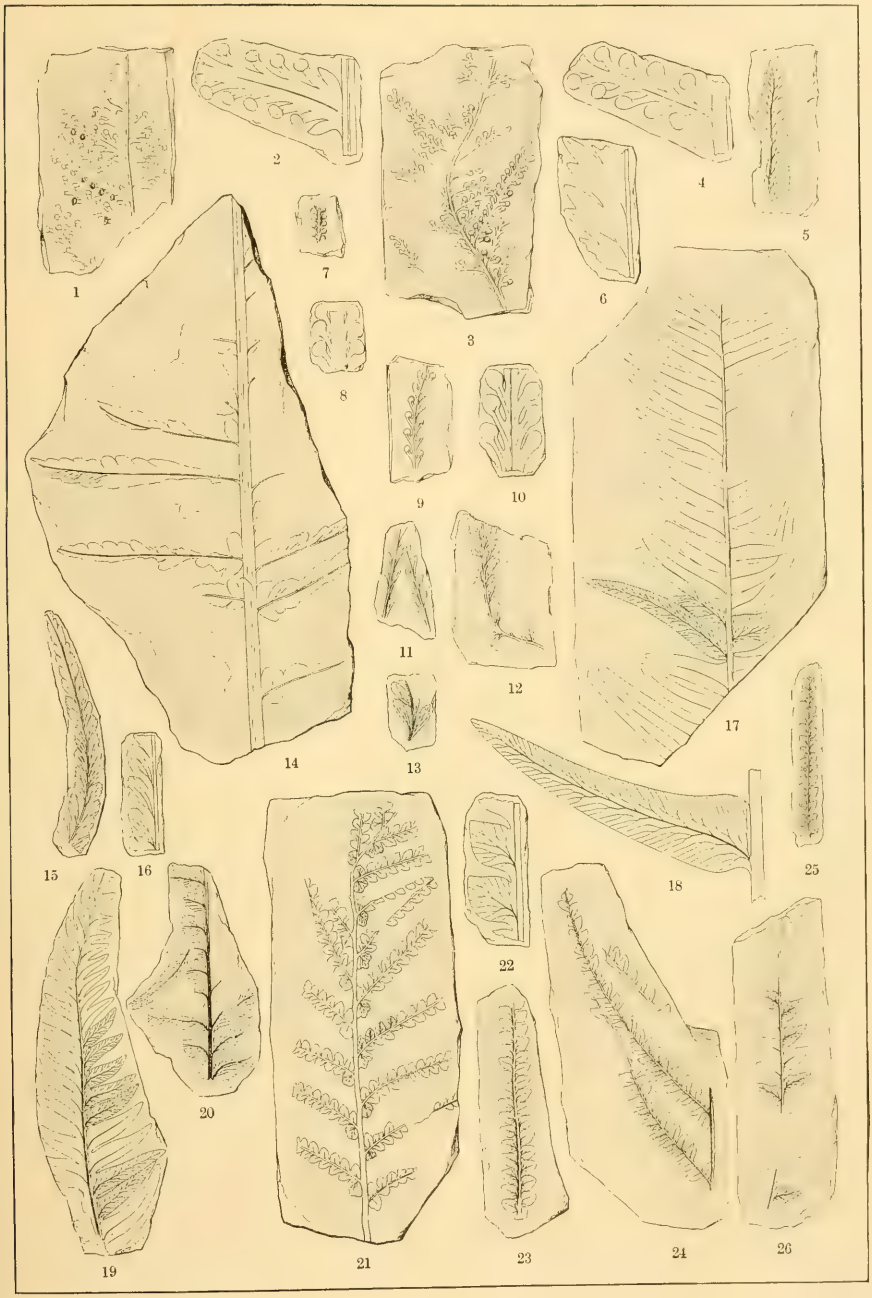

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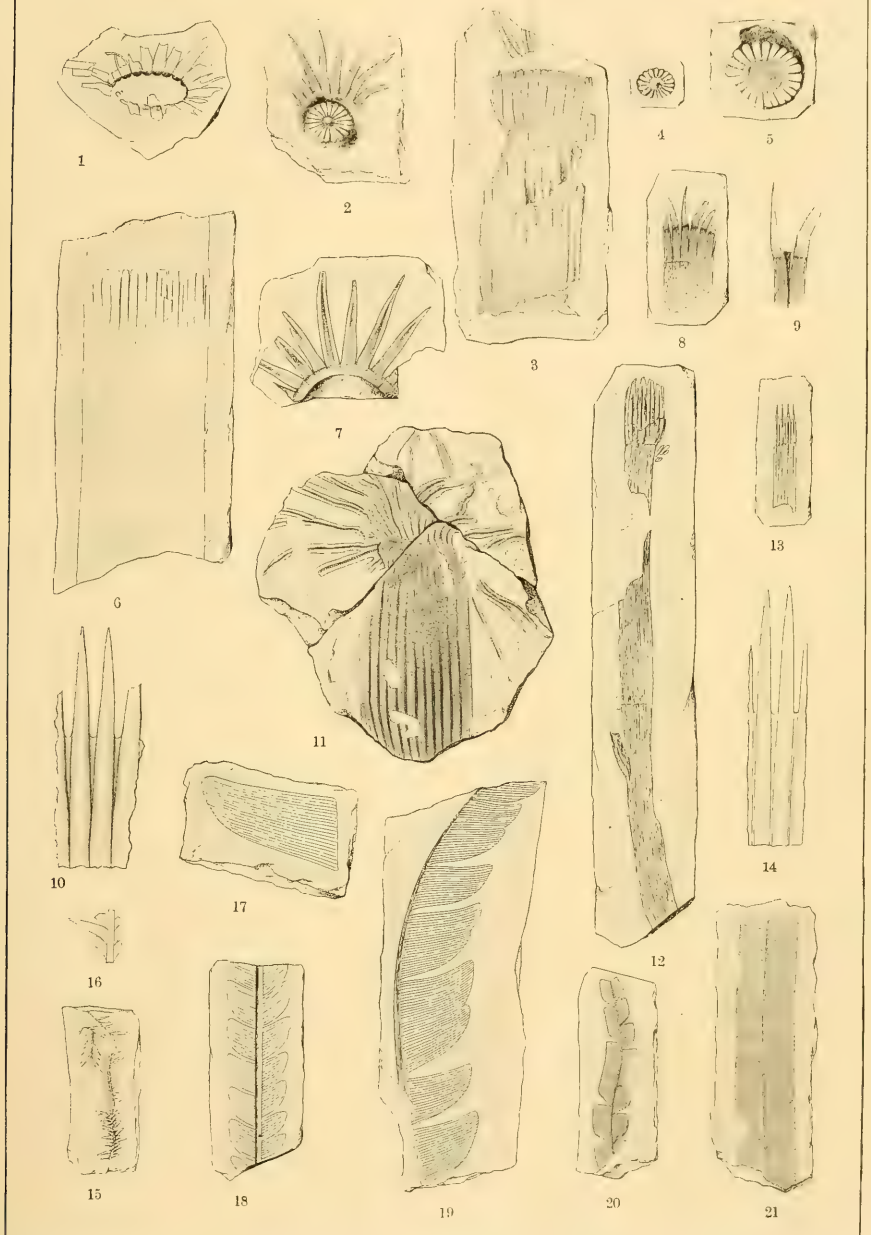

EQUISETA AND CYCADS FROM THE KOOTANIE FORMATION OF MONTANA.

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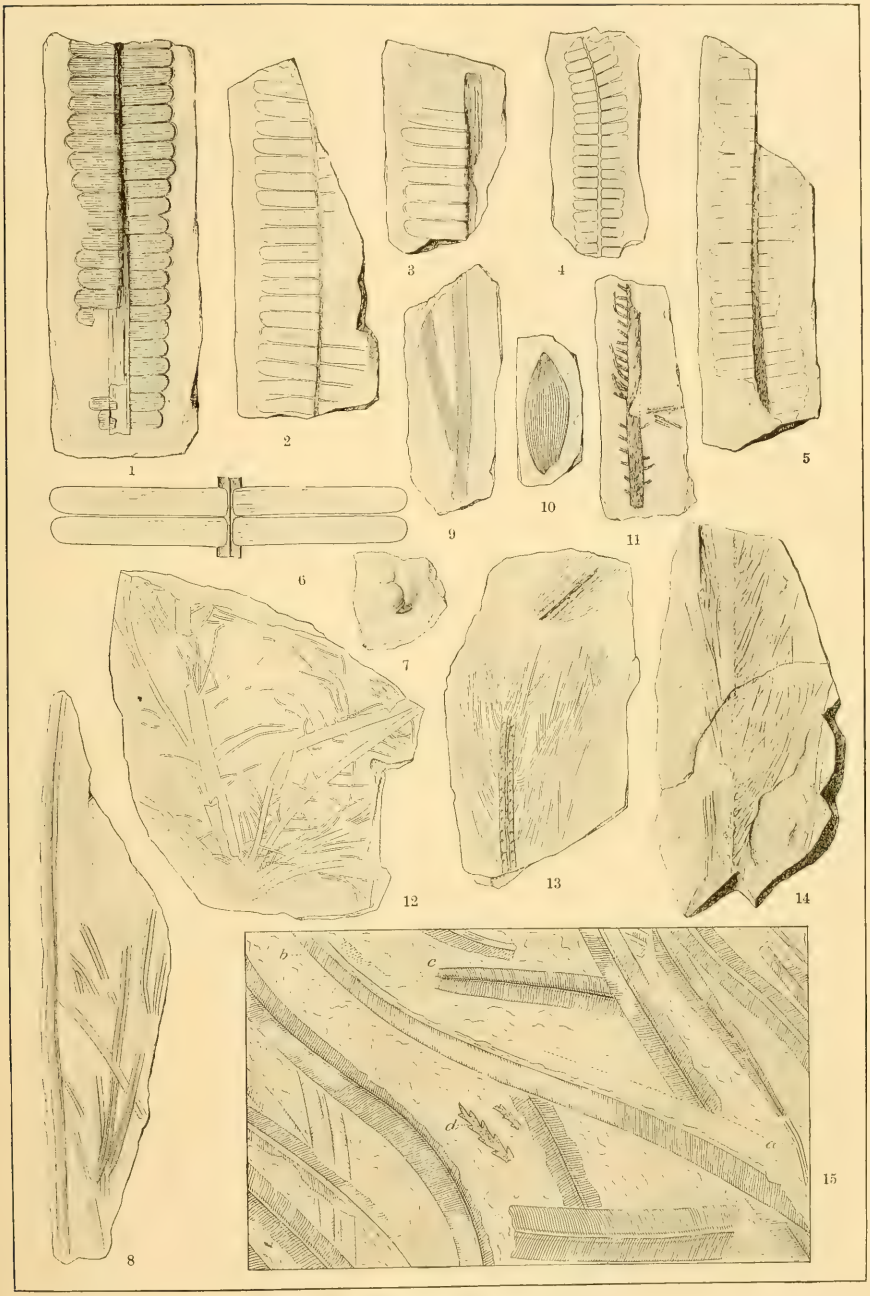

CYCADS AND CONIFERS FROM THE KOOTANIE FORMATION OF MONTANA AND THE LAKOTA FORMATION OF SOUTH DAKOTA.

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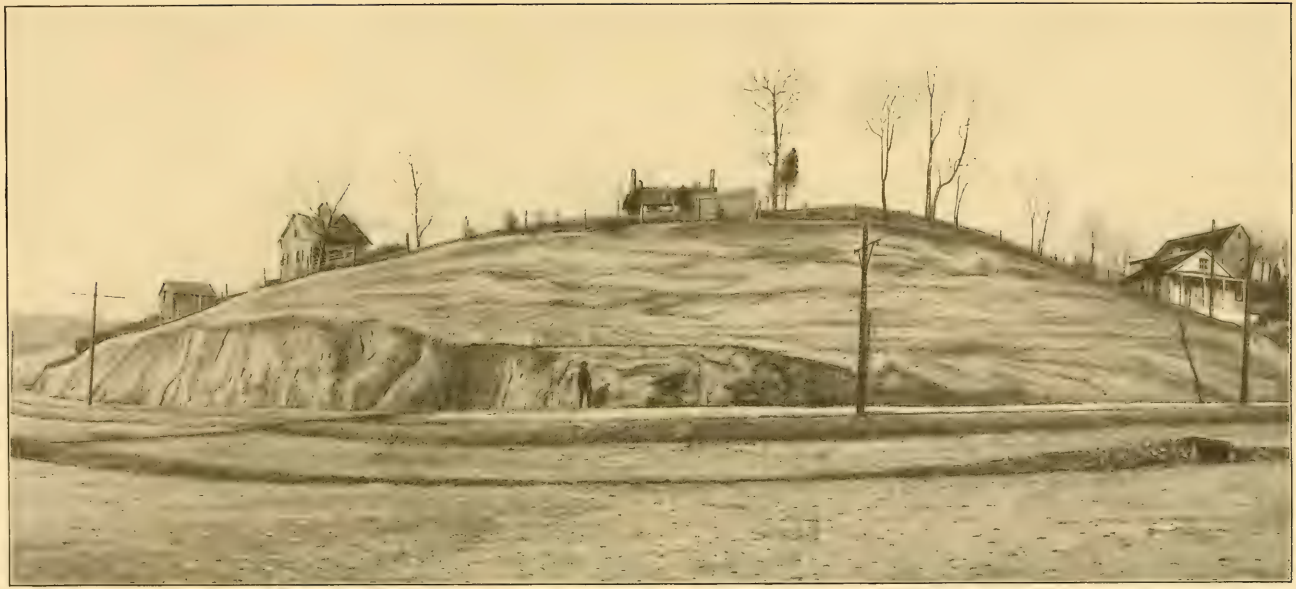

EXPOSURE OF THE POTOMAC FORMATION ON ONTARIO AVENUE, WASHINGTON, D. C.

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EXPOSURE OF THE POTOMAC FORMATION ON KANSAS AVENUE, WASHINGTON, D. C.

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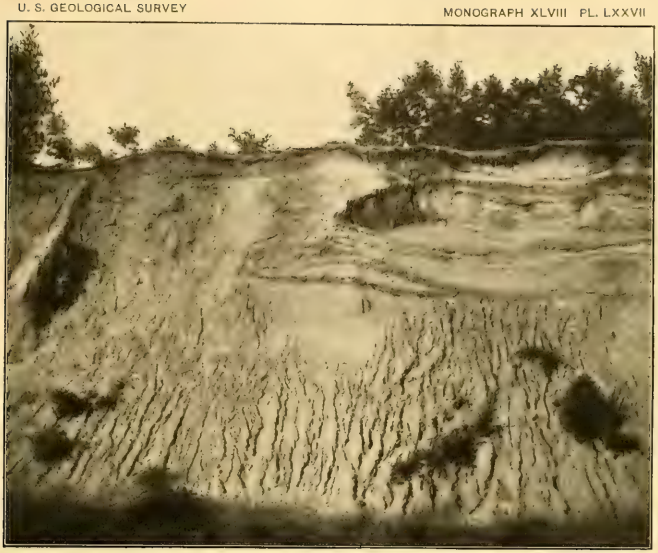

1

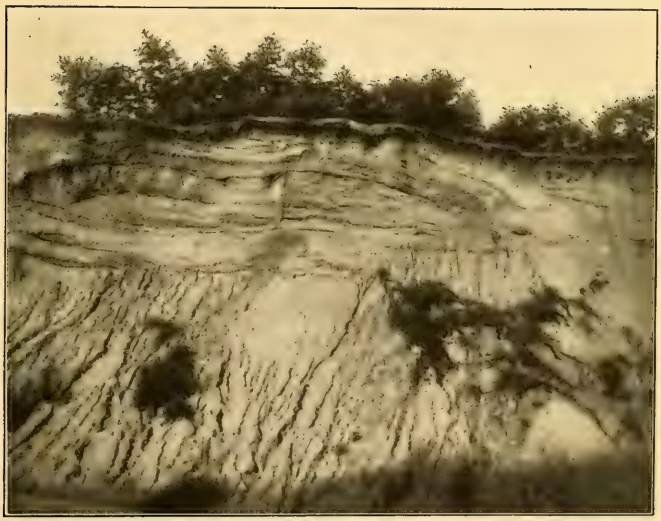

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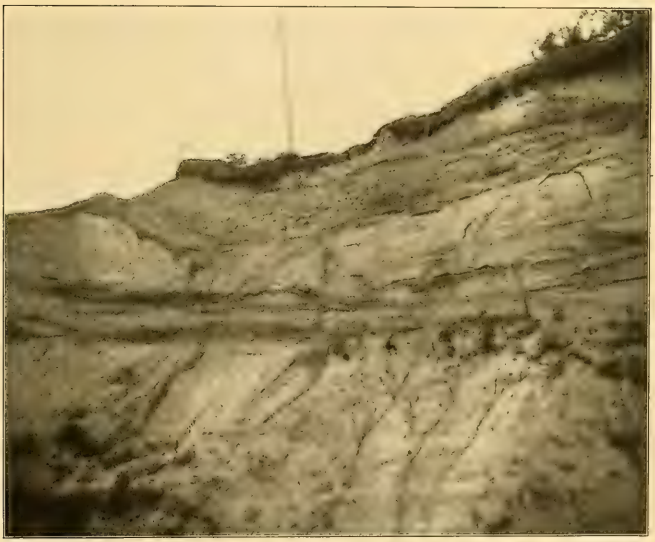
FIG. 2. South end of cut, Rappahannock sand with large lens of green clay near the top, running out on the left.

1



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1

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EXPOSURES OF THE POTOMAC FORMATION ON BACK LICK RUN, VIRGINIA.

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Map showing the distribution of the formations of the Potomac group in Maryland, the District of Columbia, and adjacent parts of Virginia, with indication, by numbers, of the localities at which fossils and other objects mentioned in the text have been found 412

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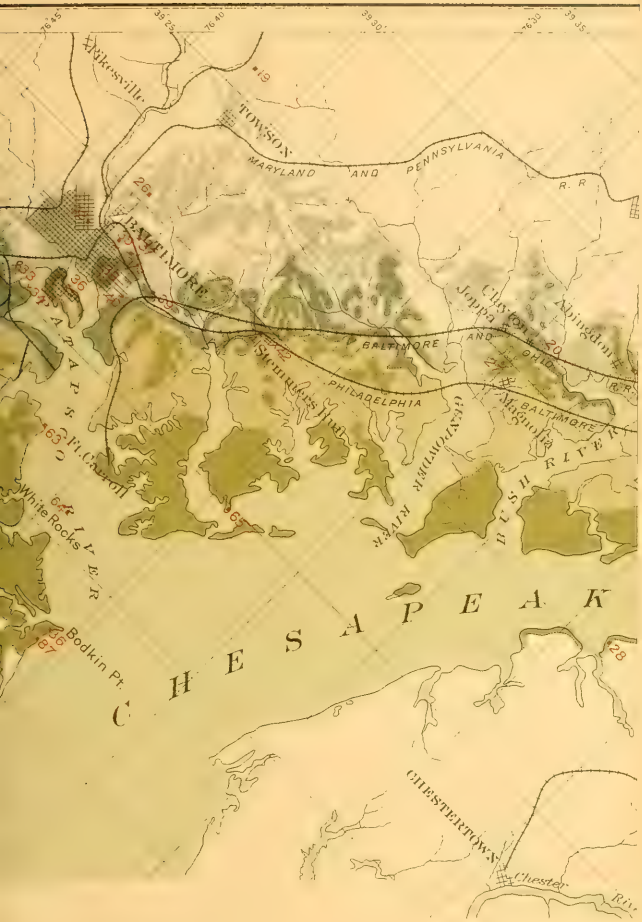
Sand Pit
Laurel
Elkridge Landing
Elkridge Landing
Ellicott City
Patuxent
Woodwardville
Red Cliffs
Bowie
Baldwin
Brightseat
Glenarvista
Collington
Seat Pleasant
Leland
Landesty
Western Branch
Hills Bridge
Lyons Creek
Lyonsville
Patapsco River
Magothy River
Severn Run
Sea level
Raritan
Hill
hool, D.C.
n, D.C.
on
Va.



Section A-B

Burtonsville to Devils Branch

Section C-D

erry Hill to Chesapeake and Delaware Canal

LEGEND

OUS

JURASSIC(?)

Patapsco

Arundel

Patuxent

ts

o Fossil etc. localities

. Other plant remains

LOCAL COLUMNAR SECTIONS

Section A-B

Burtonsville to Devils Branch

Section C-D

Cherry Hill to Chesapeake and Delaware Canal

LEGEND

JURASSIC(?)

Raritan

Patapsco

Arundel

Patuxent

Fossil etc. localities

Other plant rem...

MAP
SHOWING THE AREAL DISTRIBUTION OF
THE FORMATIONS
OF THE
POTOMAC GROUP
IN
MARYLAND

PLATE LXXXI.

PLATE LXXXI.

Maryland Potomac Cycads.

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Cycadeoidea marylandica (Font.) Cap. & Solms. Side and base view of the Johns Hopkins University Cycad, No. 1; also of silicified wood from the Potomac formation of Maryland, from a photograph by Tyson..... 419

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CYCAD TRUNK AND SILICIFIED WOOD FROM THE POTOMAC FORMATION OF MARYLAND.

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TRUNK OF CYCAD EARLY DISCOVERED IN THE POTOMAC FORMATION OF MARYLAND.

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Maryland Potomac Cycads.

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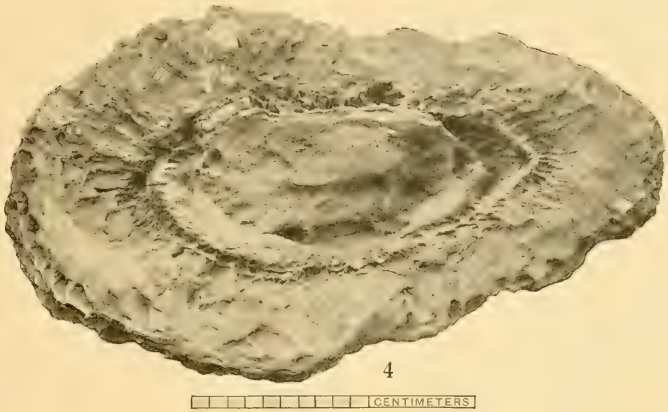

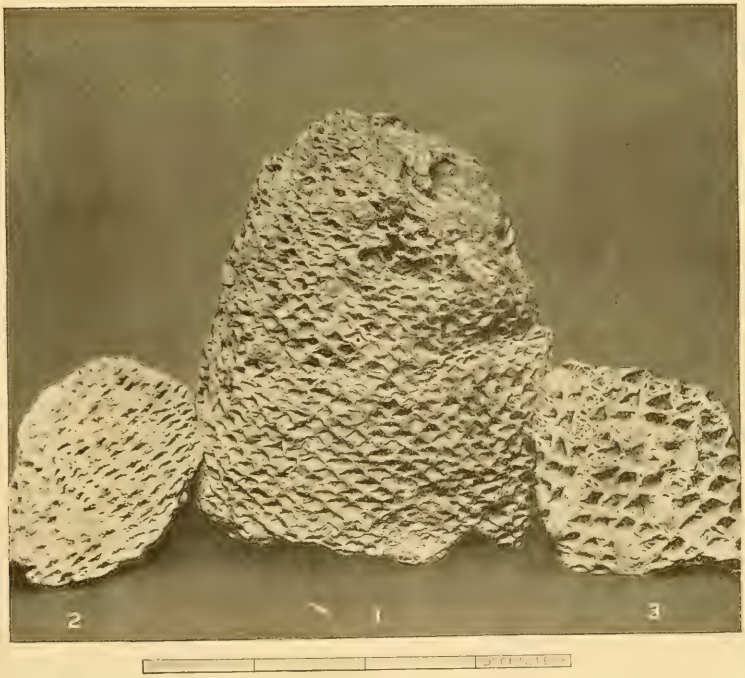

TRUNKS OF CYCADS EARLY DISCOVERED IN THE POTOMAC FORMATION OF MARYLAND.

PLATE LXXXIV.

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Maryland Potomac Cycads.

Group of cycads in the museum of the Johns Hopkins University, Baltimore.

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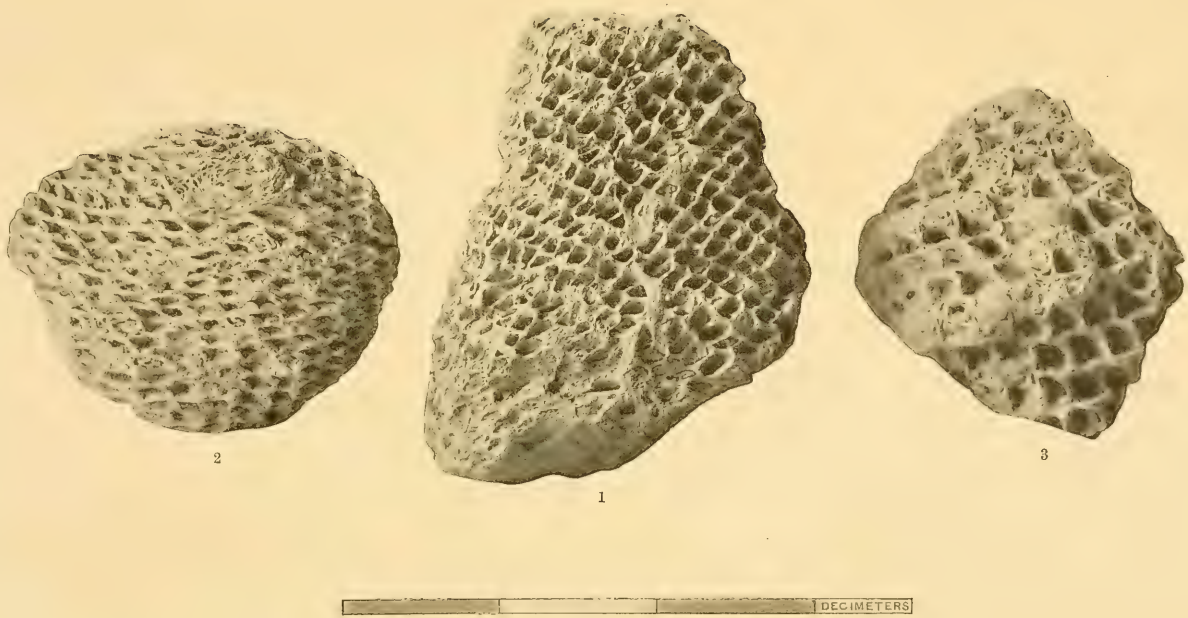

TRUNKS OF CYCADS EARLY DISCOVERED IN THE POTOMAC FORMATION OF MARYLAND.

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Maryland Potomac Cycads.

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Cycadeoidea Bibbinsi Ward.

View of the external surface of the fragment sent by Philip Tyson to Sir William Dawson, known as the Dawson Cycad..... 459

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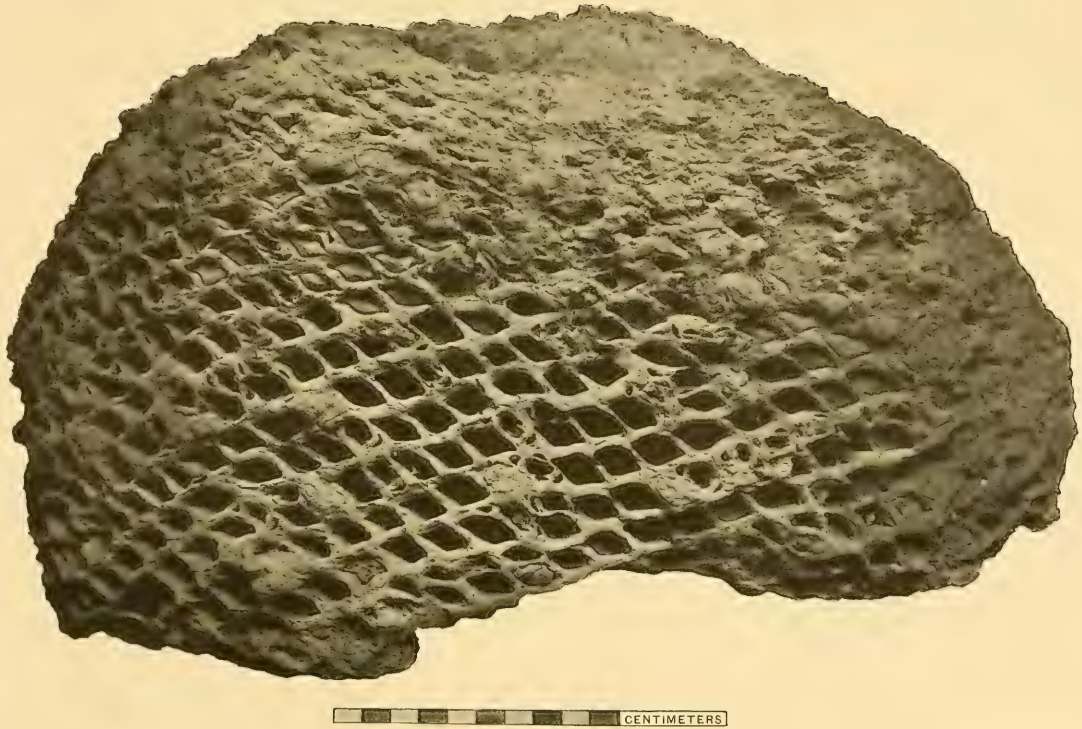

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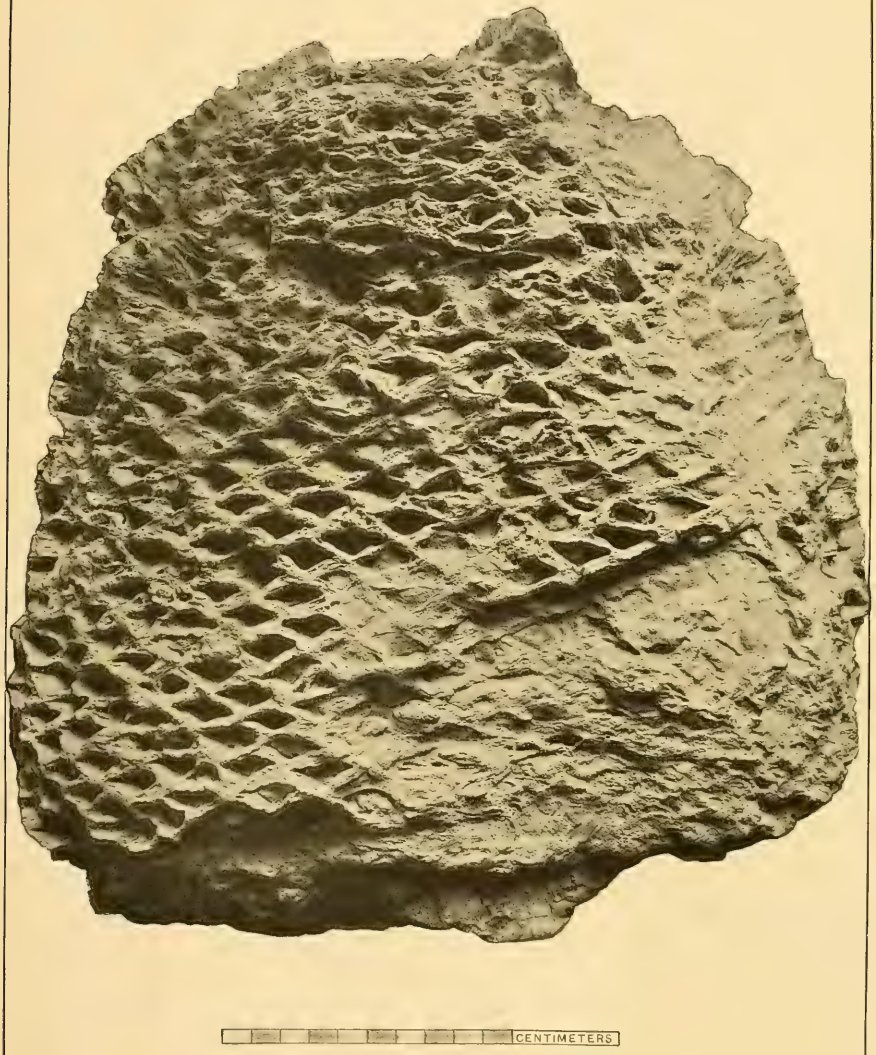

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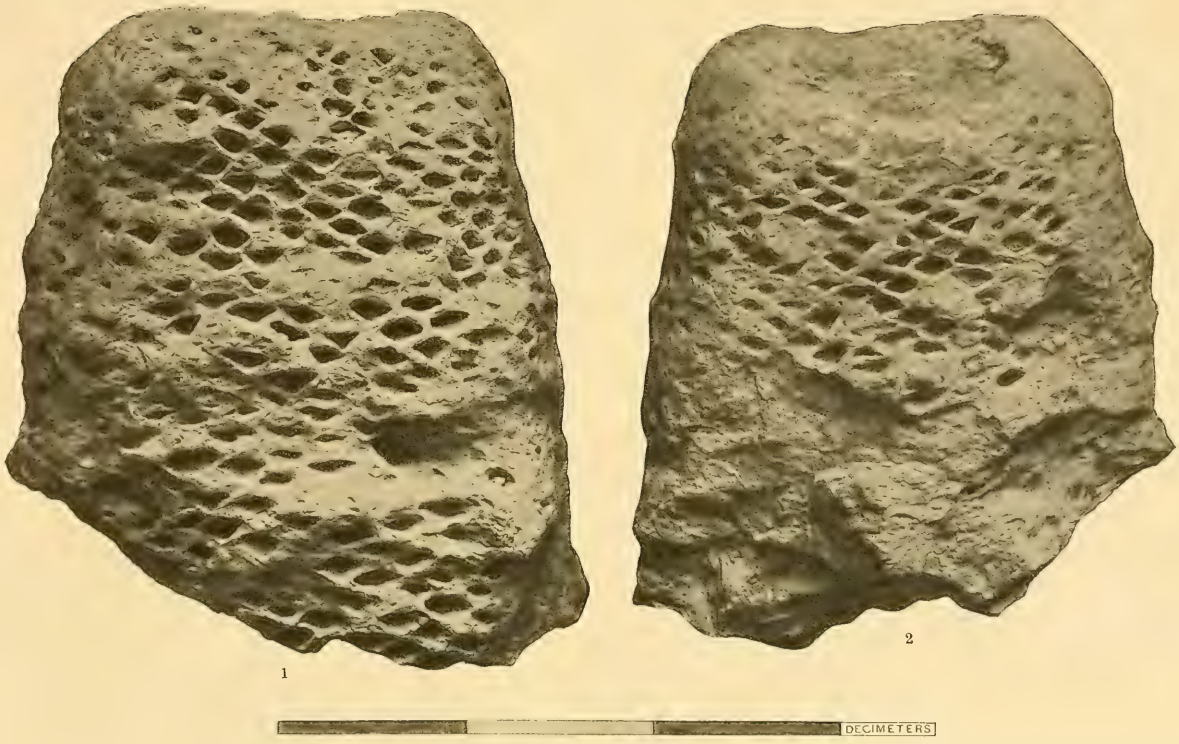

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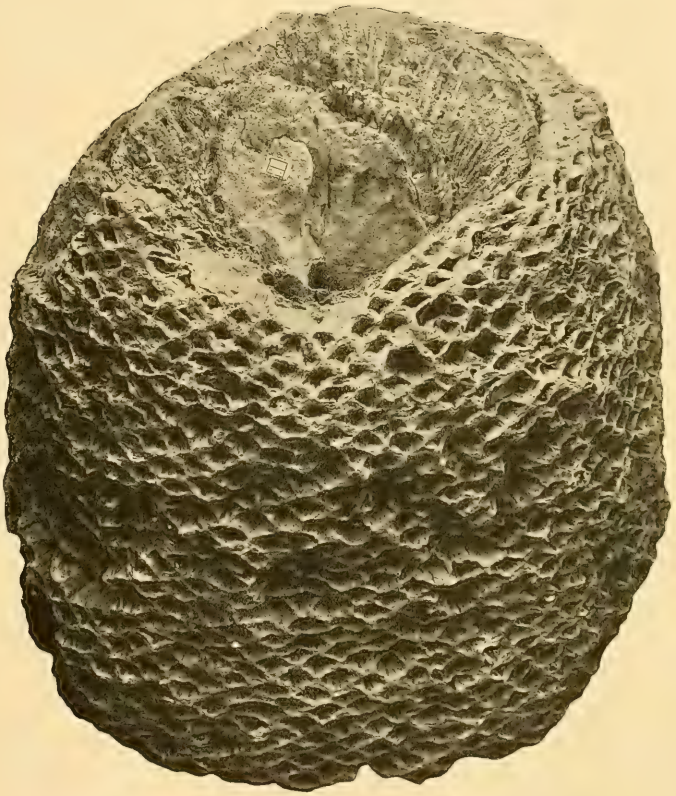

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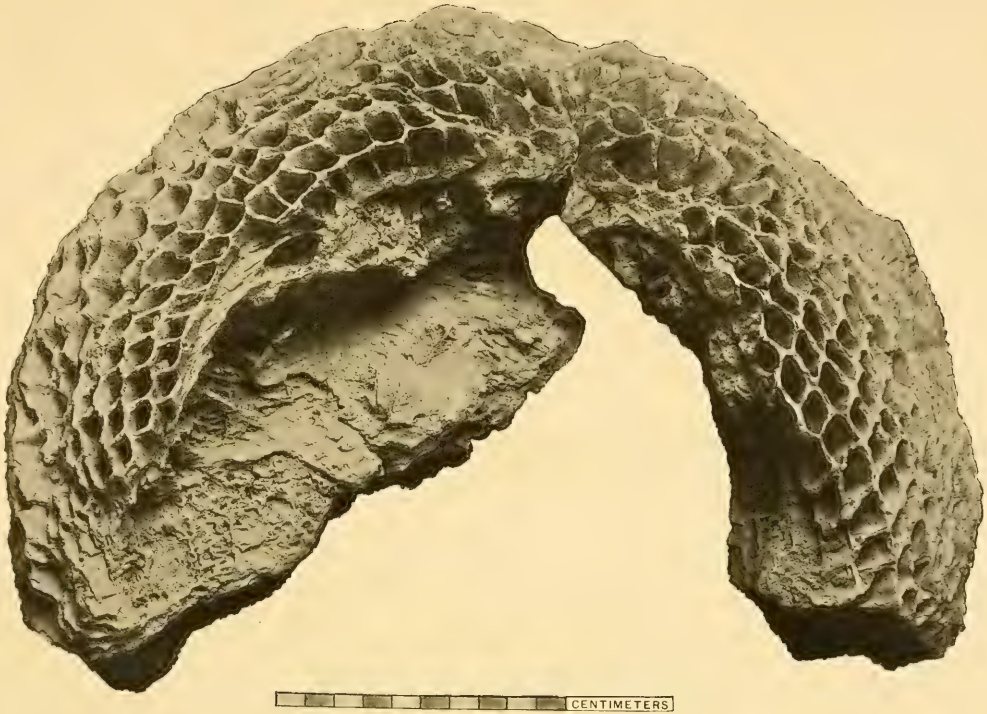

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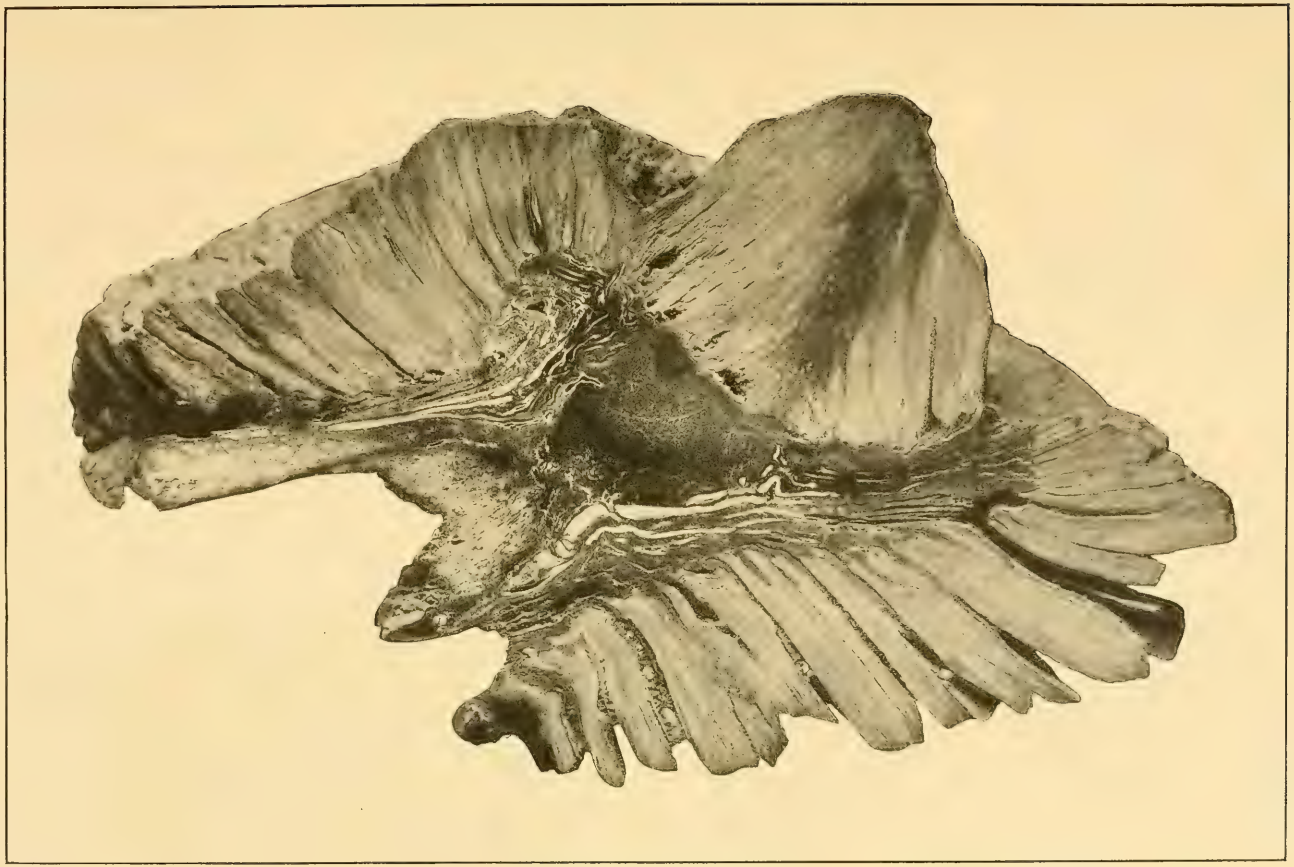

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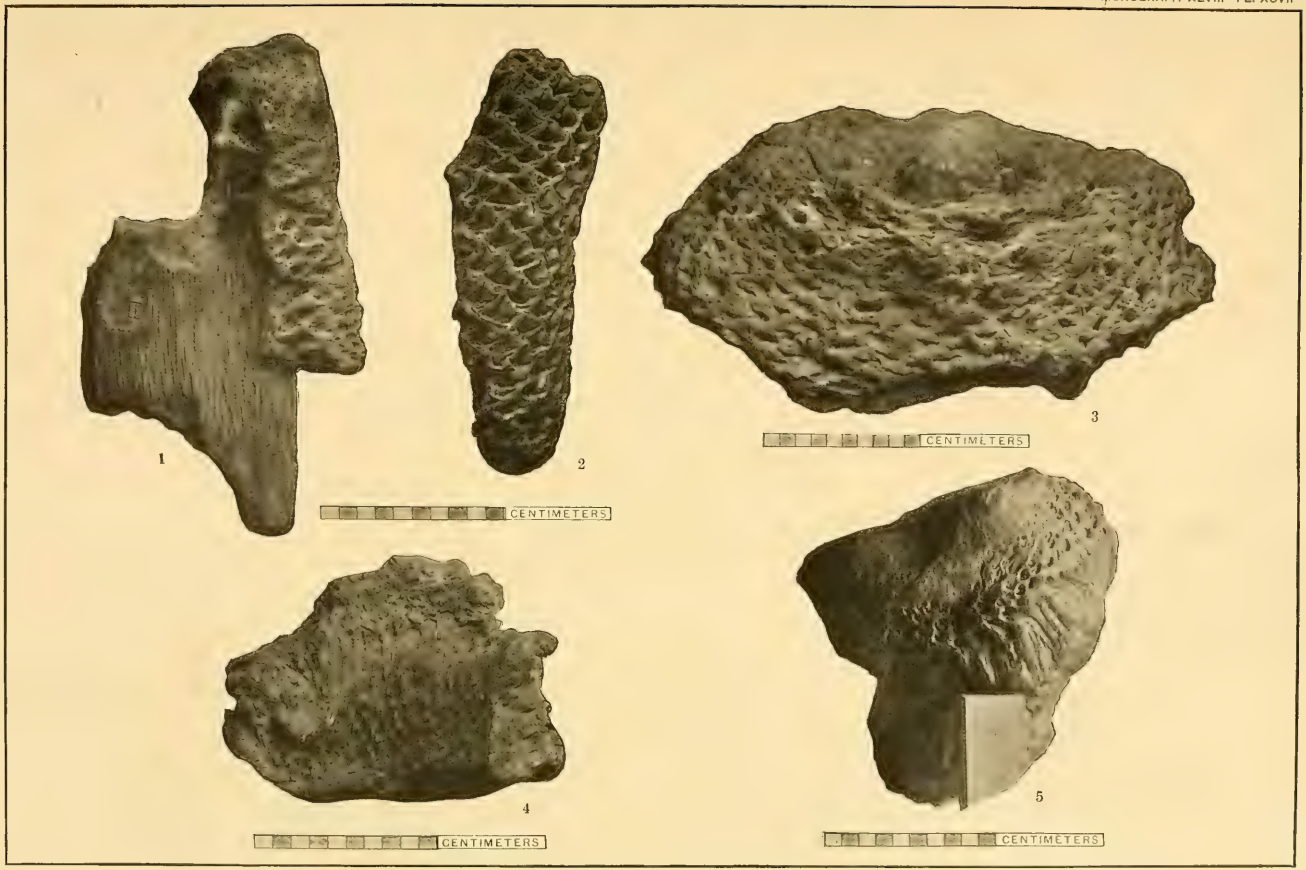

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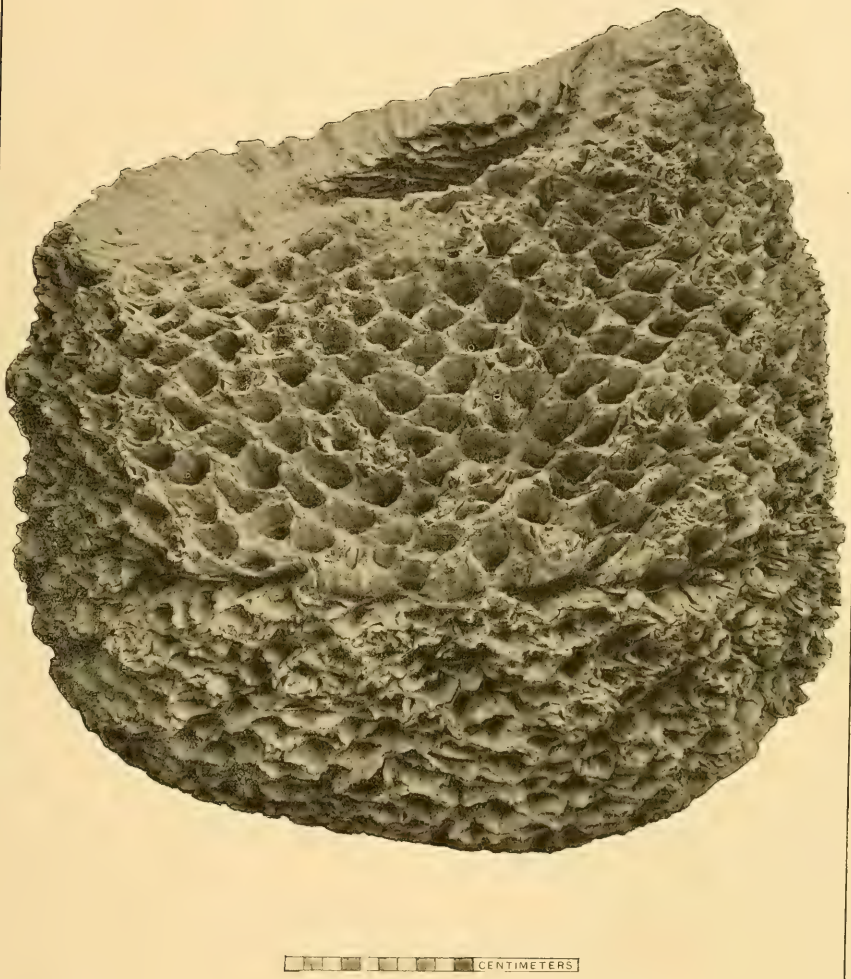

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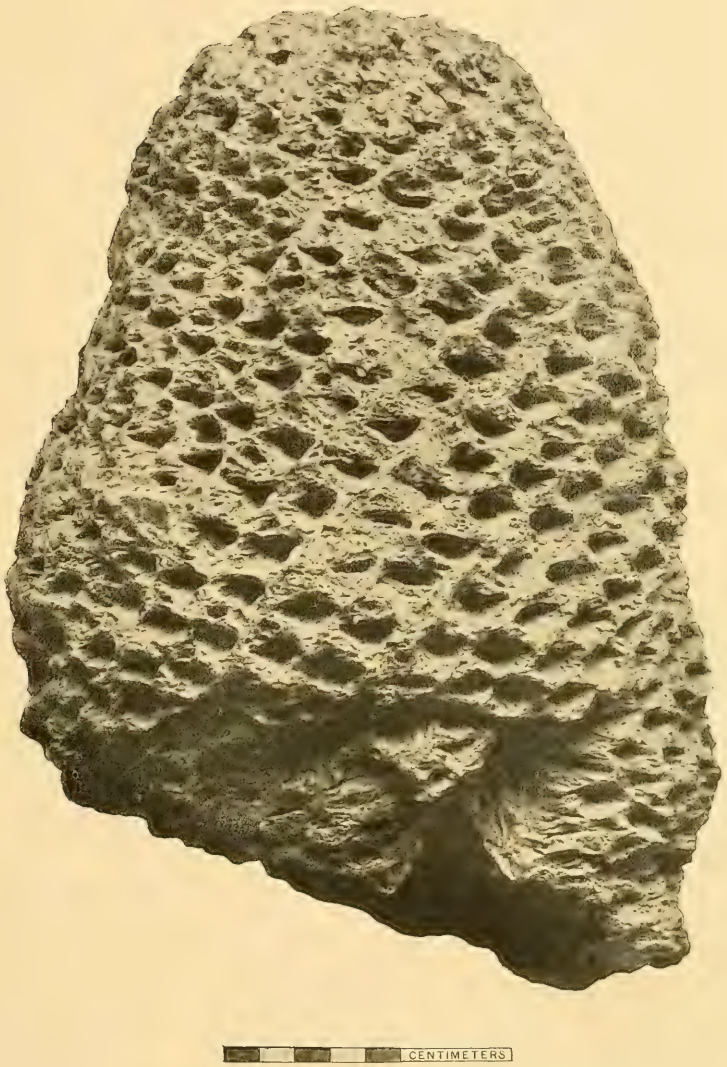

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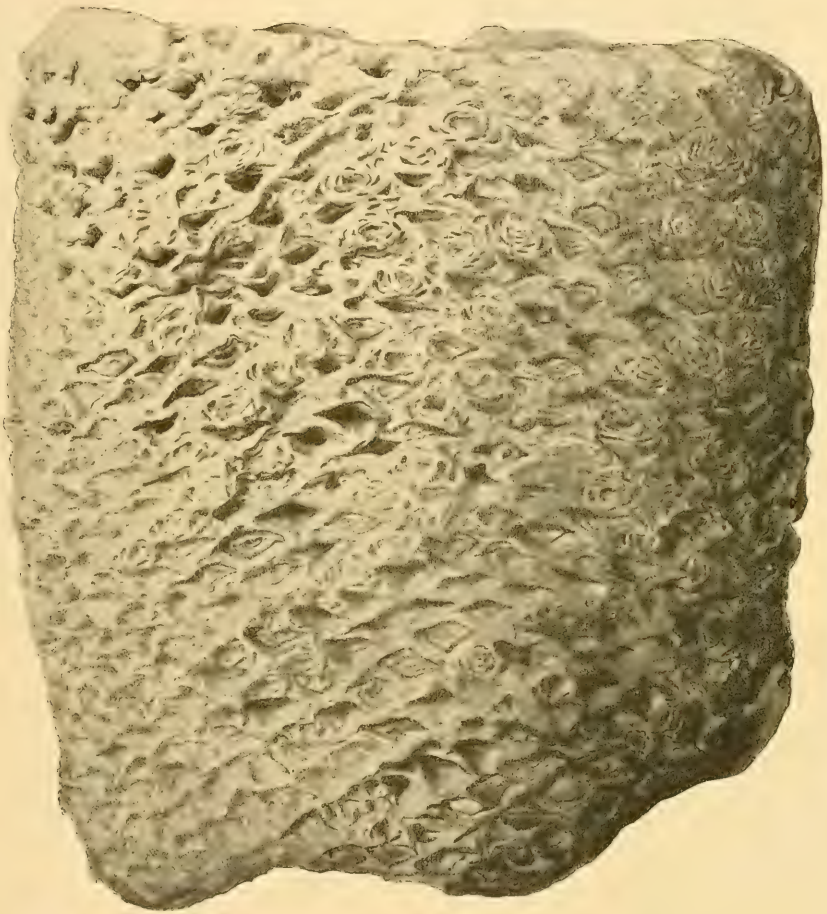

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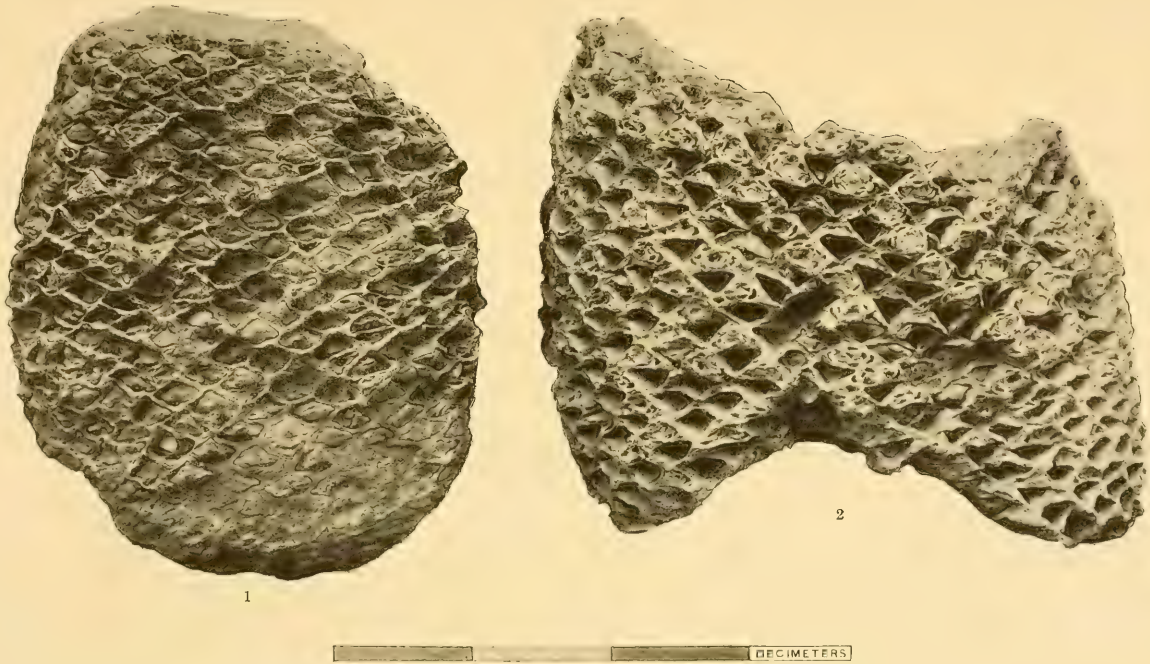

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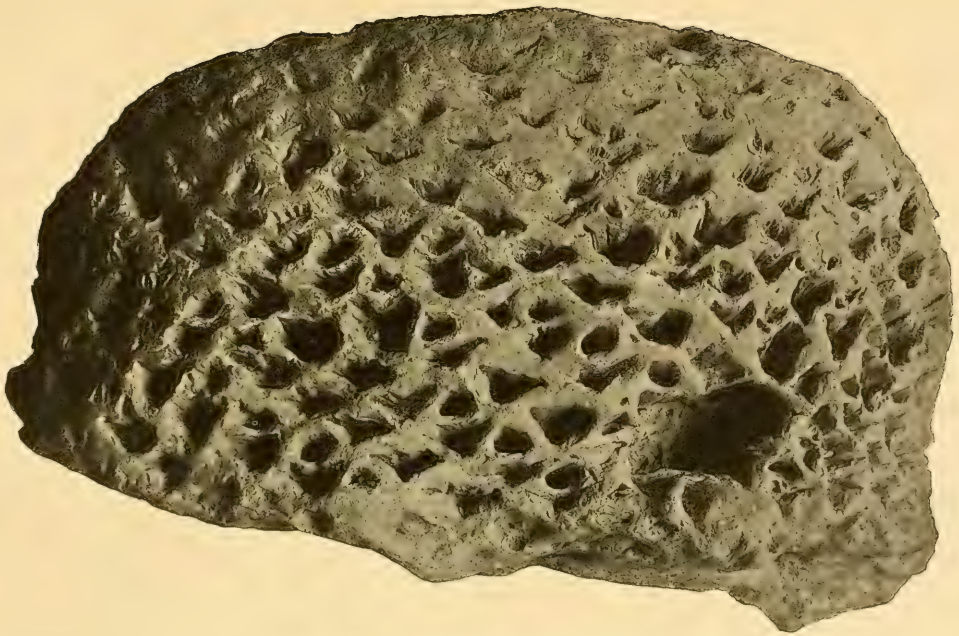

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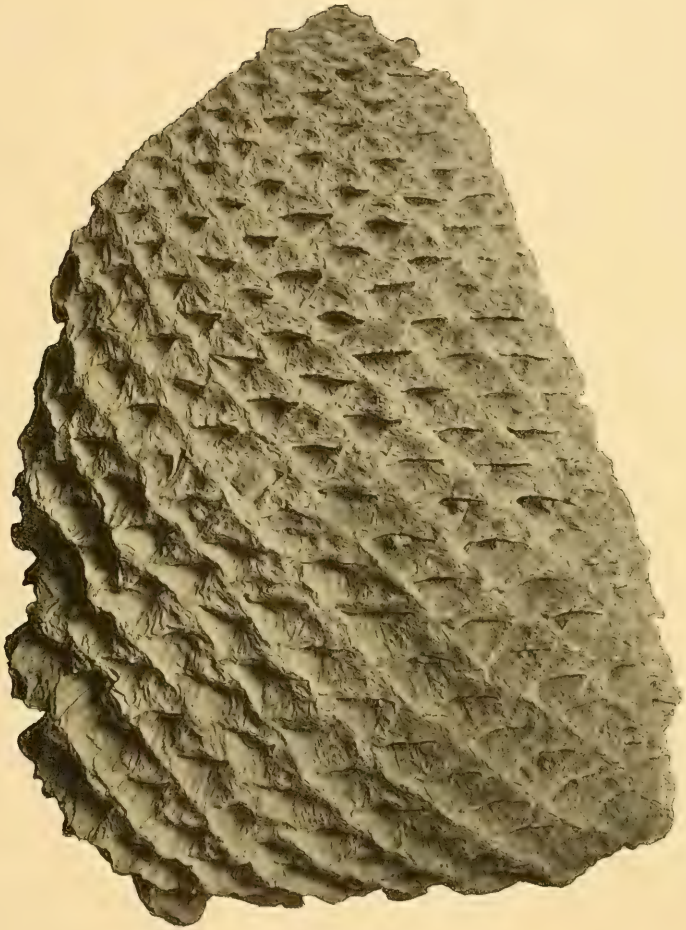

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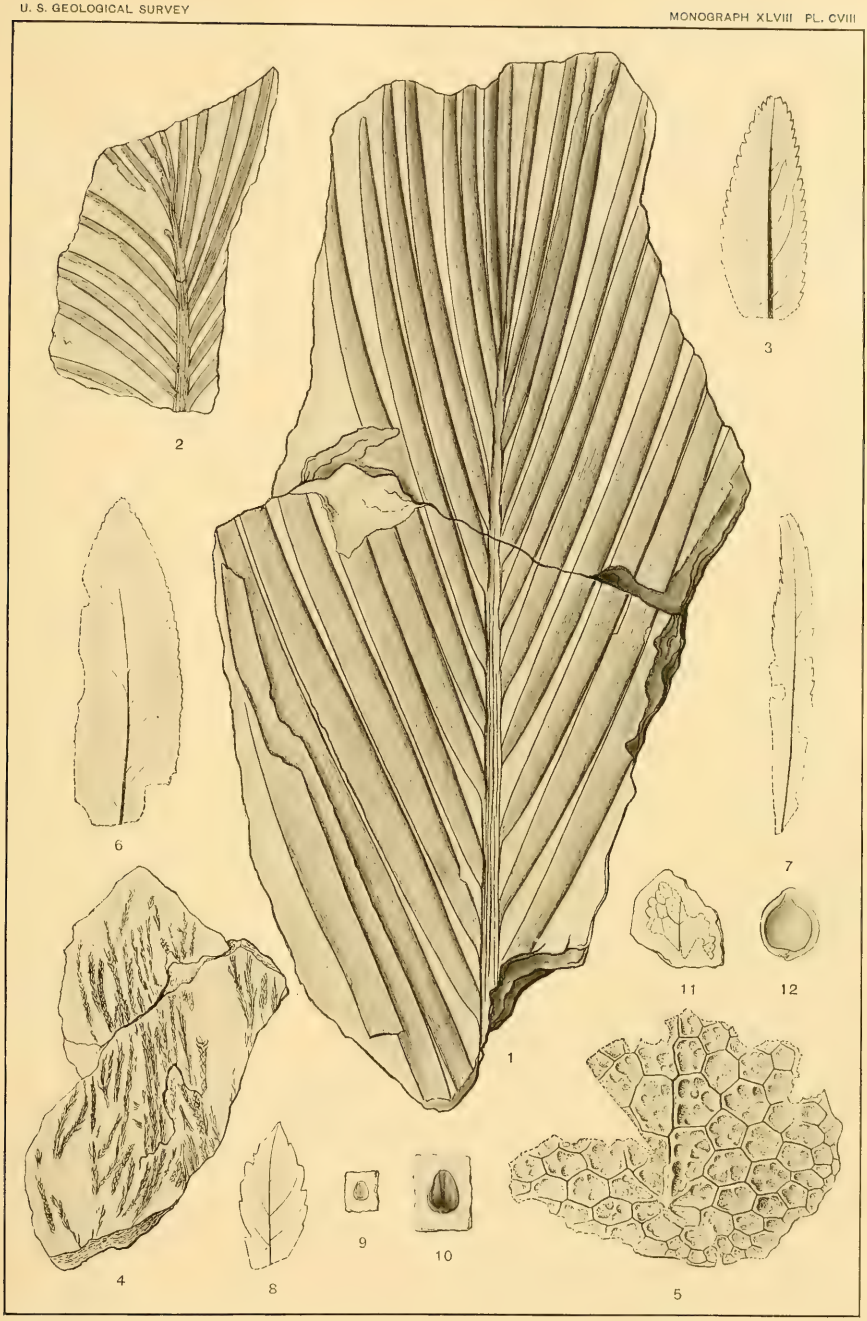

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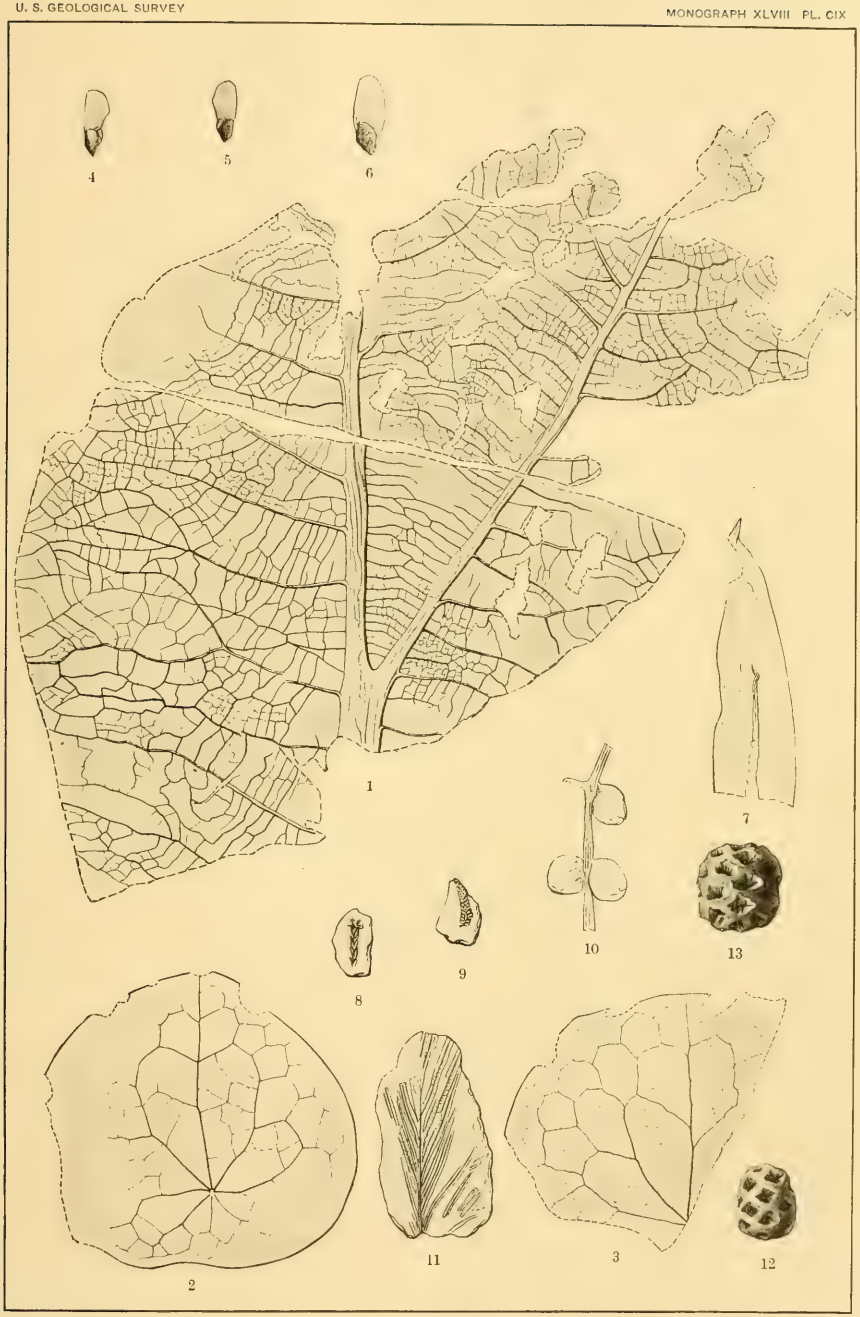

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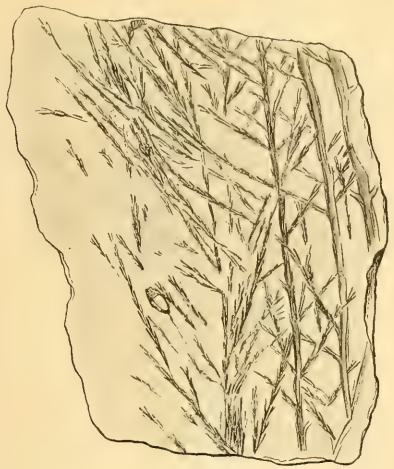
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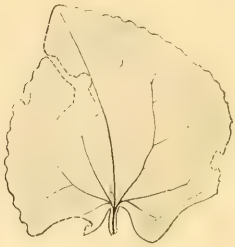
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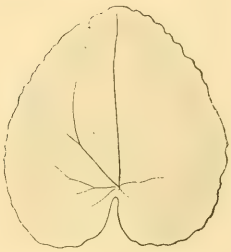
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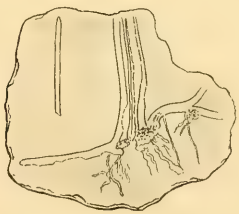
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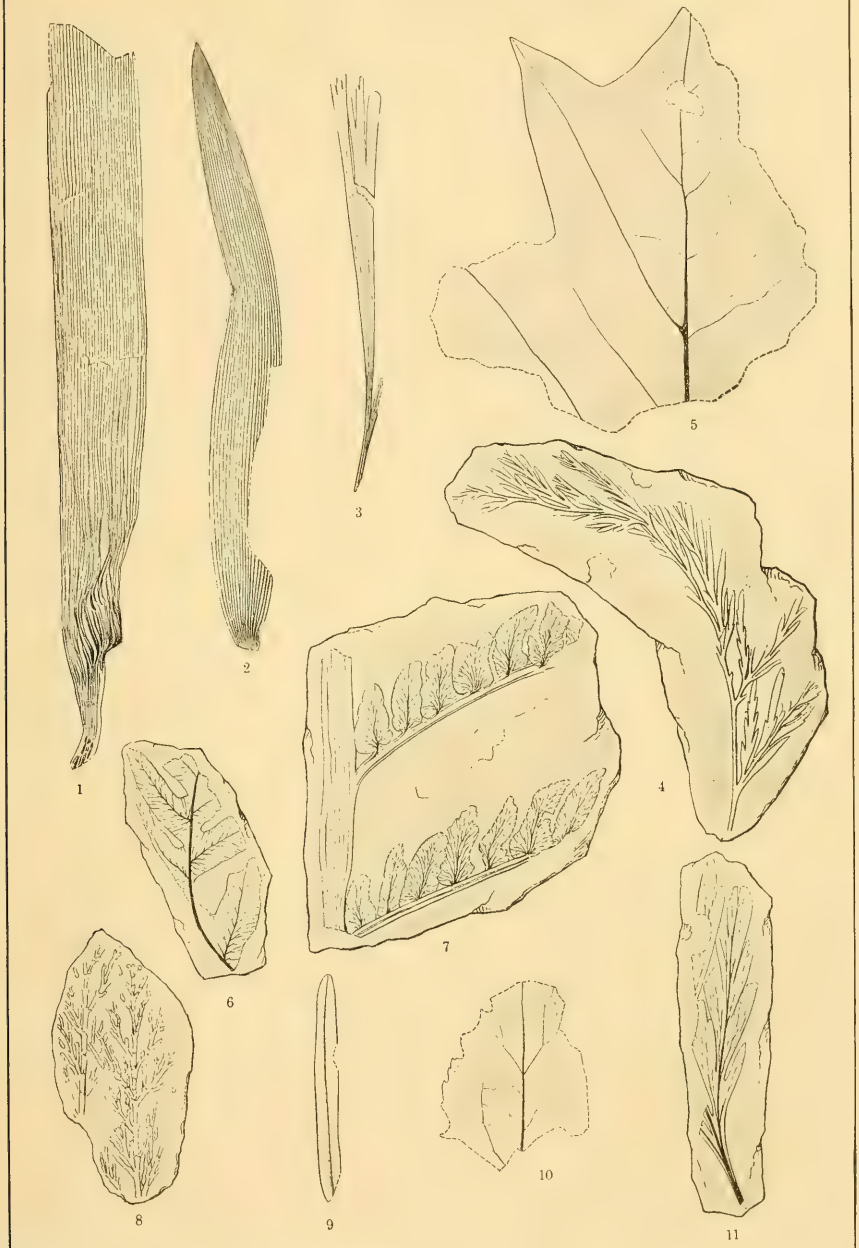

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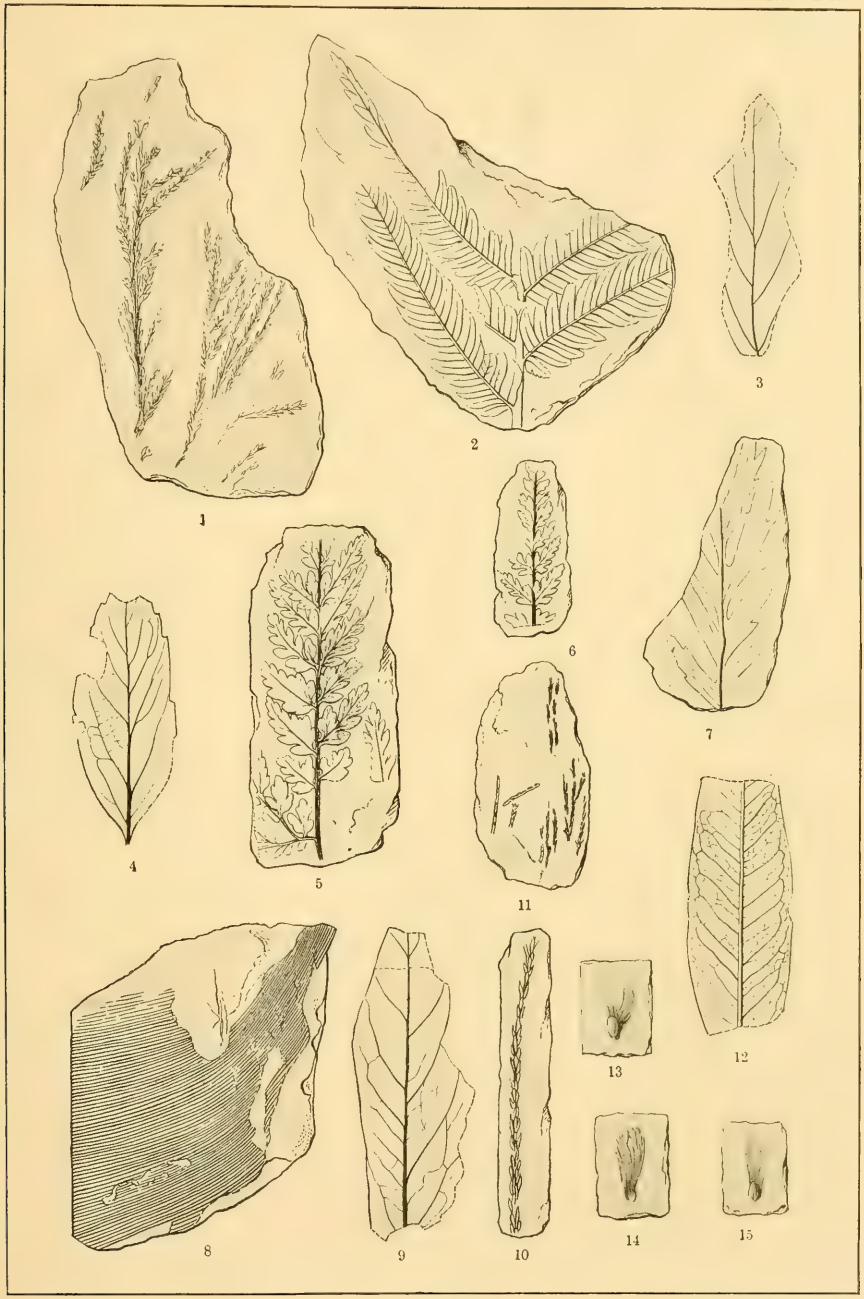

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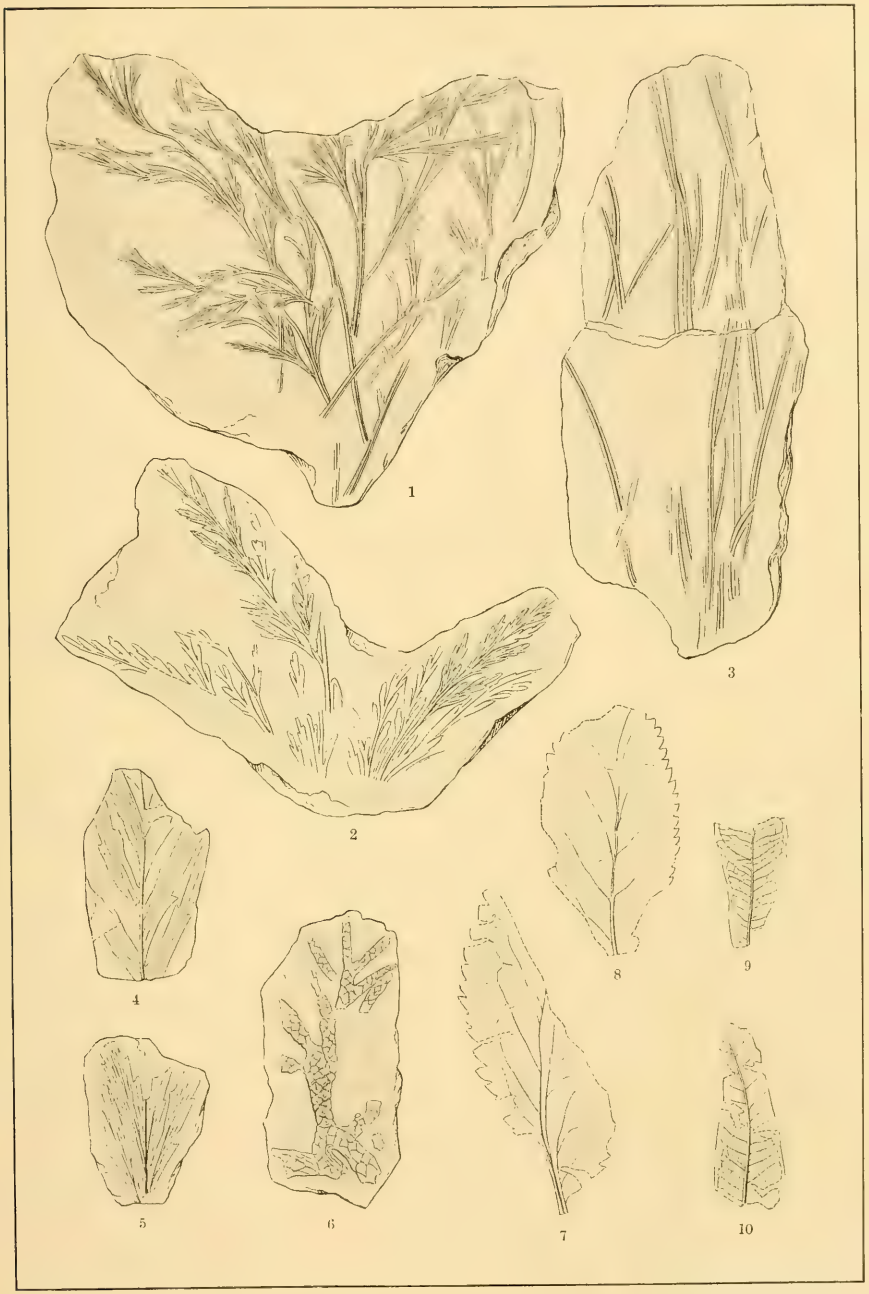

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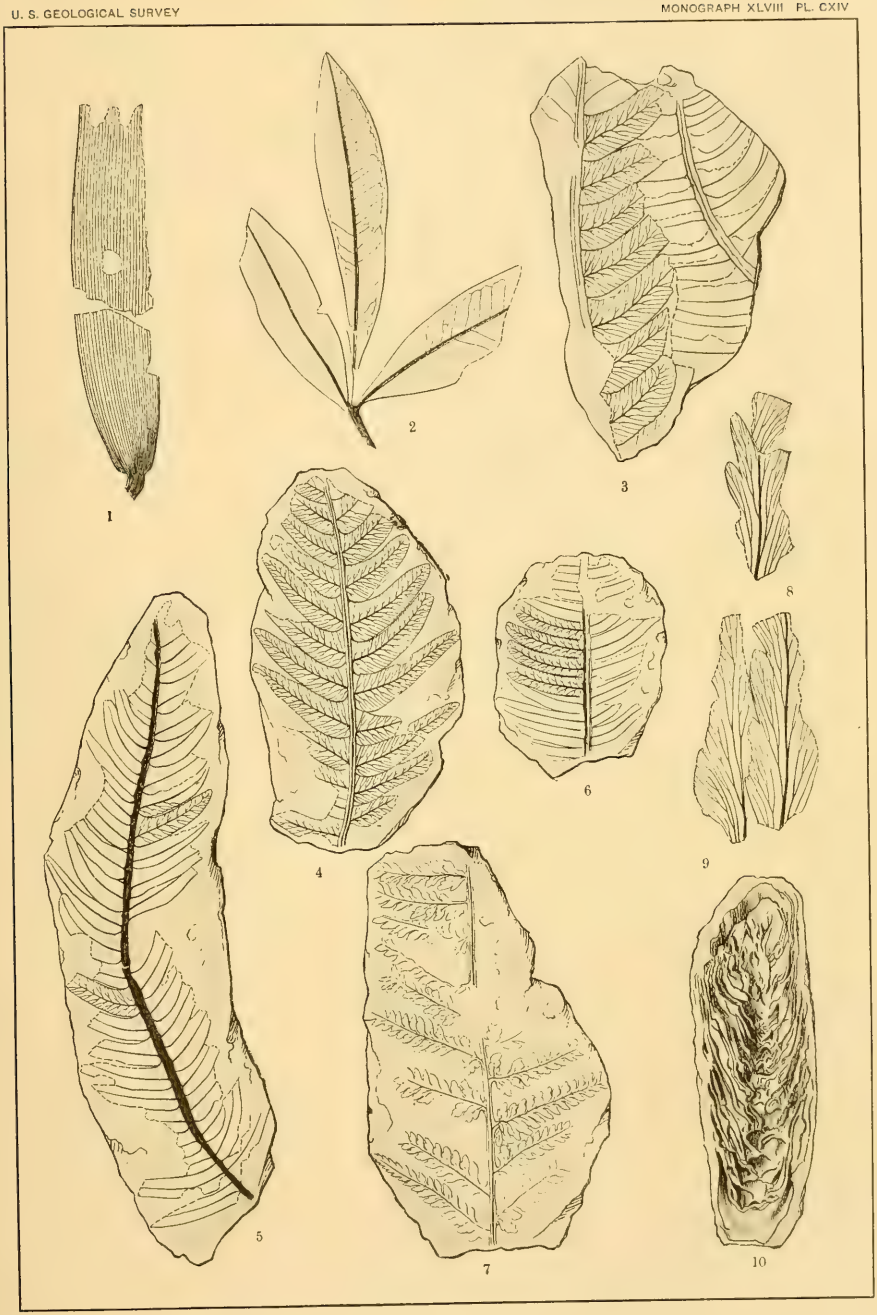

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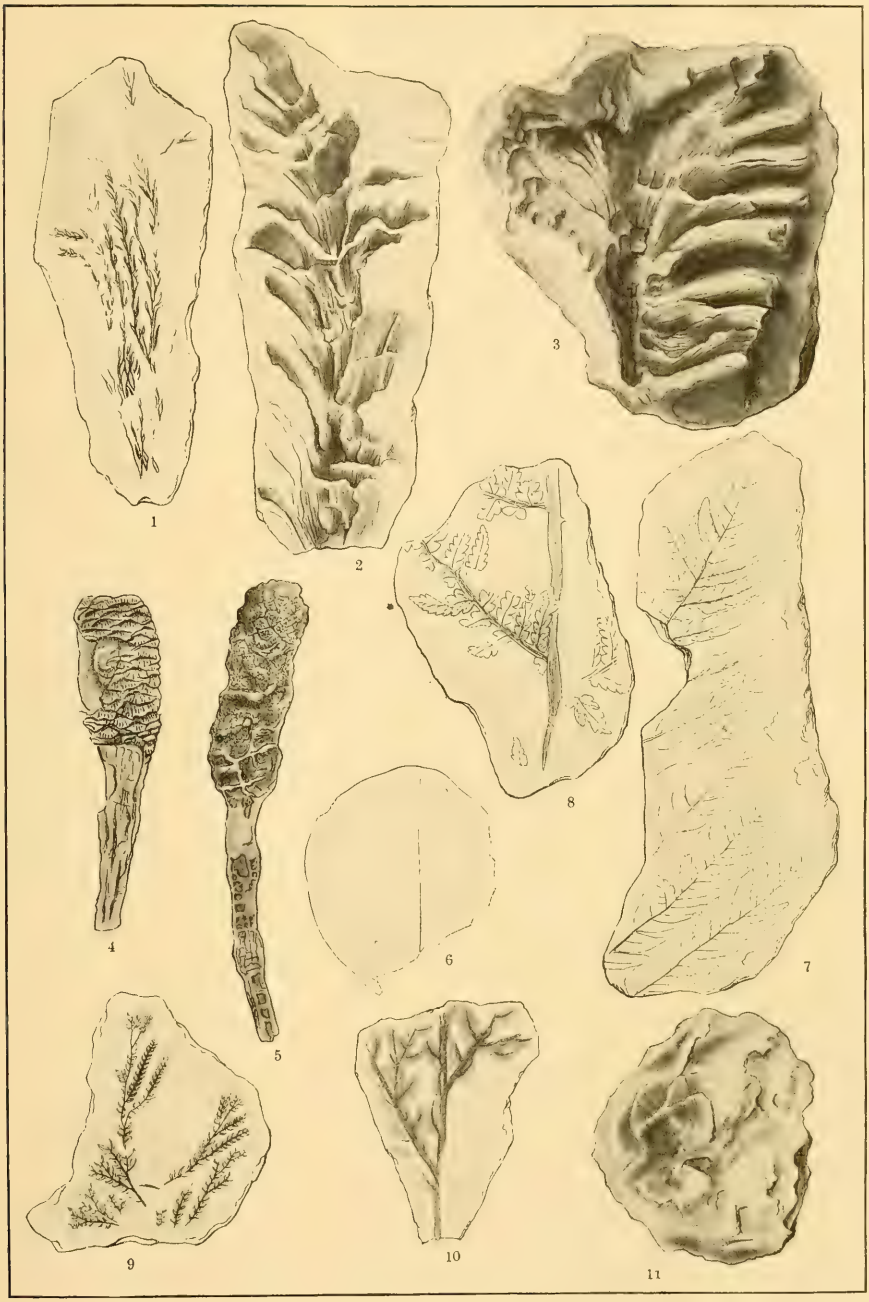

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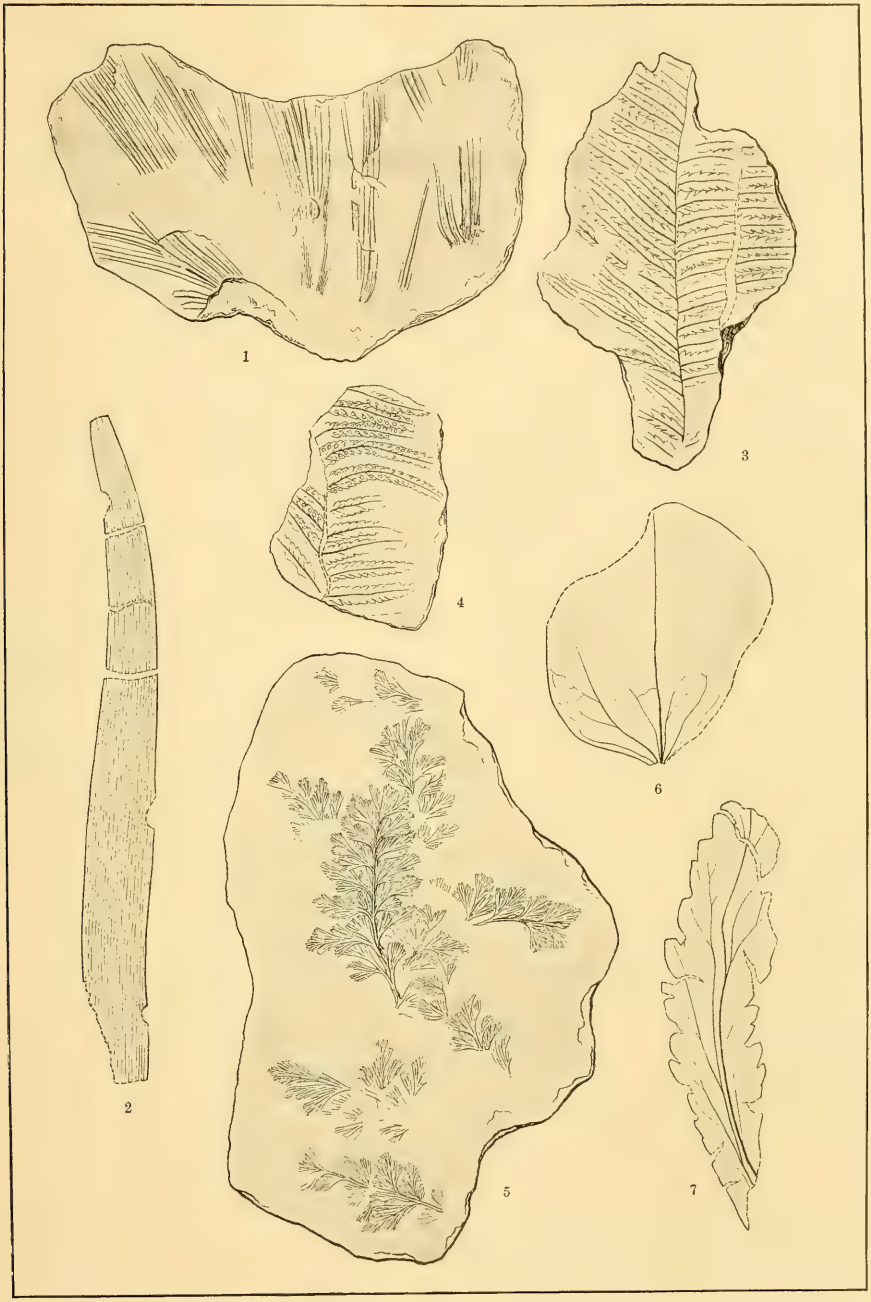

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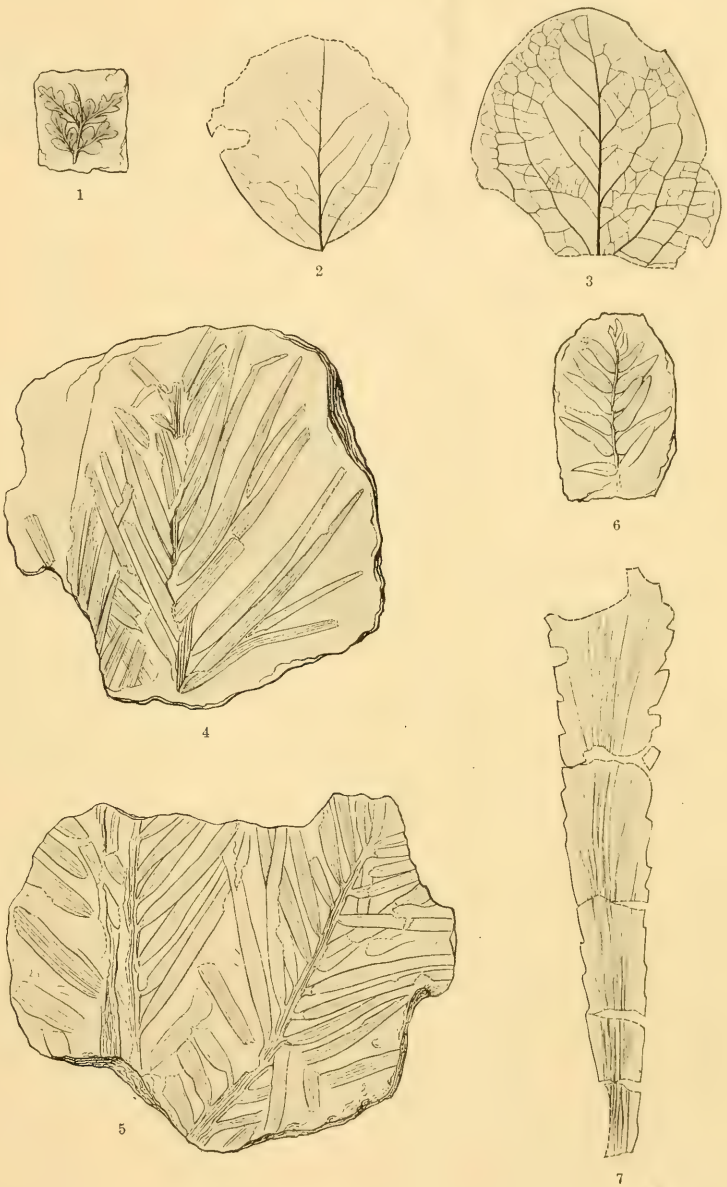

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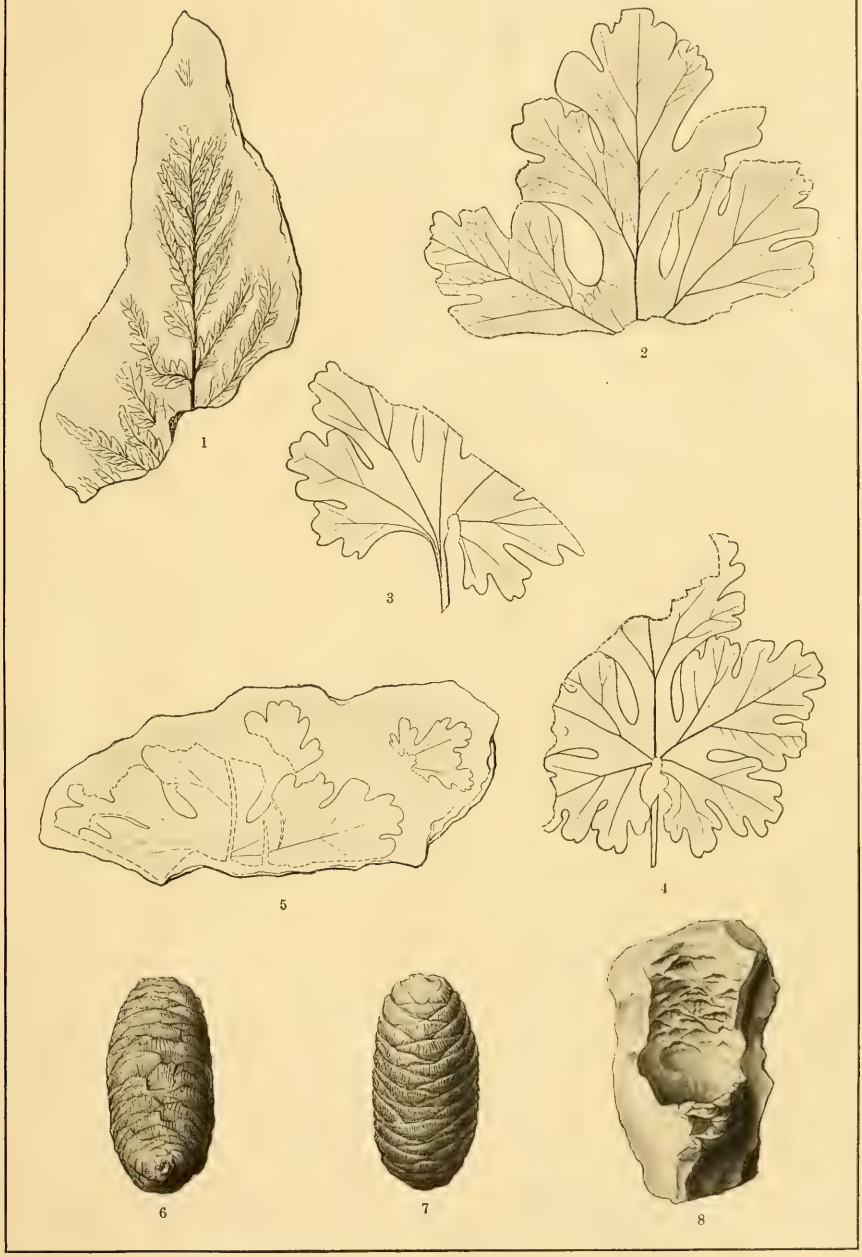

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